issn 1868-3207 • Vol. 22 • Issue 3/2021

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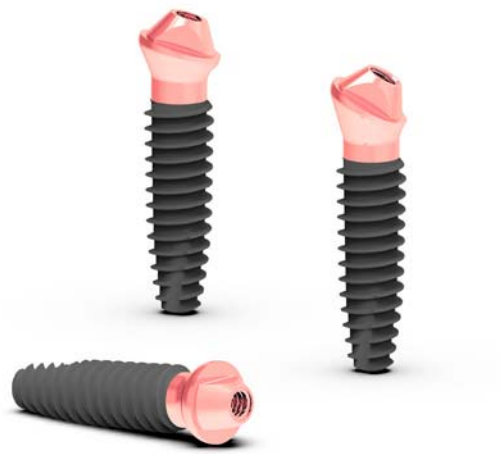

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Dr Georg Bach

President of the DGZI

Dental implantology in times of crisis

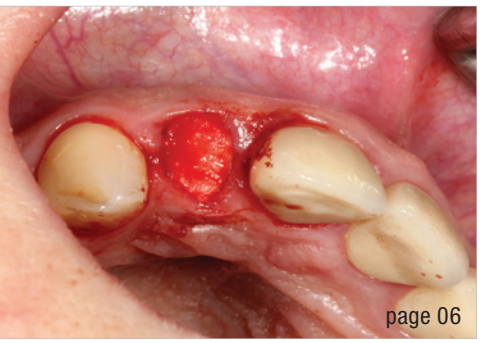
Implantology has been a crucial factor in dental healthcare and continues to be so—even in these challenging times of the coronavirus. Patients in Germany and other countries have been receiving reliable dental care over the past months with regard to all oral and surgical matters, which naturally includes implantology. The fact that implantology is a stable and reliable pillar of dental healthcare in crises like the current one does not seem self-evident at first glance, but it underscores the importance that this special discipline enjoys among the population today. Implantology must not be considered optional; rather is it integral to the basic therapy spectrum of dentistry and cannot be sidelined if circumstances get dire. This is not least due to the many years of dental training and continuing education in implant surgery and prosthetics, as well as the continuous development of first-rate products and services from our trade and industry partners.

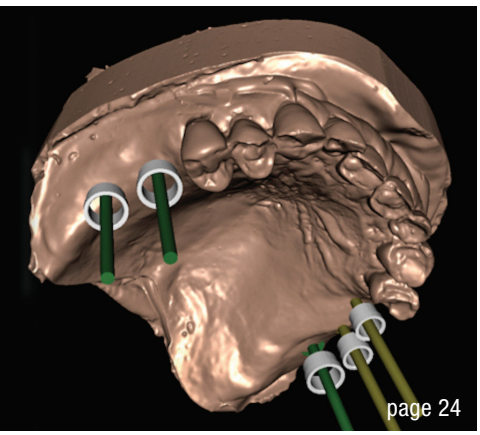
In light of this, it is quite evident that the Future Congress of the German Association of Dental Implantology (DGZI) remains indispensable. The 50-year anniversary of DGZI was initially planned to be celebrated last year in the German city of Bremen, the association's founding city. However, owing to the COVID-19 pandemic-related restrictions imposed by the federal government at that time, the congress had to be postponed. The cancelled congress will now be held on 1 and 2 October 2021 in Cologne in Germany with a programme that remains unchanged in terms of its high degree of versatility and interactivity and its first-rate character. In addition to the informative dental exhibition, the Future Podium will commence on Friday with a lecture of my own on triumphs and tragedies in implantology, which will be followed by lectures by Prof. Shahram Ghanaati on the use of autologous blood concentrates in implantology and oral surgery and Prof. Katja Nelson on digitalisation in implantology (from freehand to guided surgery), and a subsequent joint panel discussion. Thereafter, the streaming of a live surgery conducted by Dr Jan Klenke demonstrating periodontal recession coverage using an acellular dermal matrix and a tutorial by Prof. Daniel Grubeanu on elevated immediate restoration concepts will follow. The subsequent three sessions of more than 20 table clinics (45 minutes each) will allow for direct peer–peer exchange on different treatment approaches, concepts and products within the context of implantology and peri-implantitis therapy. The digital poster presentation will kick off on Friday as well, and the winners will be awarded the next day. Saturday will be dedicated to the transfer of academic knowledge through lectures by internationally renowned speakers. We are honoured to have been able to attract, among others, the presidents of numerous leading expert societies as speakers for this part of the programme. You will find the complete Future Congress programme at www.dgzi-jahreskongress.de.

We are looking forward to finally seeing you in person again! With this in mind, I wish you a beautiful, successful and harmonious late summer and an exciting time reading this new issue of implants—**international magazine of** oral implantology.

Yours,

Dr Georg Bach





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References

[1] Conserva E. Initial stability after placement of a new buttress threaded implant. A case series study. implants. 2019(3):24-28.
[2] Ruppin J. One-year clinical experience with Progressive-Line implants. EDI journal. 2020(4):54-63.

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Delayed immediate implant placement and direct soft-tissue management

Dr Haki Tekyatan, Germany

In the case of implant planning, the preservation of soft tissue and bone is essential for functional and aesthetic long-term success. There are now various different techniques and materials available. The timing of implant insertion and soft-tissue shaping play a crucial role, as do the measures taken in advance of the planned therapy. A targeted strategy can generate favourable conditions before implant placement. In this context, the use of bone grafting materials in combination with intravenously collected autologous platelet concentrates (I-PRF and A-PRF) has become increasingly important in recent years. With this "biologisation" of specially developed bone grafting materials for alveolar management, stable preservation of the extraction socket and the bone can be expected while promoting wound healing. The greatest loss of bone and, as a result, soft tissue occurs in the first 12 months after tooth extraction. In the literature, loss rates of up to 60% are reported.[3] In this regard, Tan et al. were able to show in a systematic review that six months after extraction there is a horizontal bone loss of 29–63% and a vertical bone loss of 11–22%. The transverse bone loss was found to be higher than the vertical bone loss.[12] This was also confirmed by Araujo and Lindhe in their animal studies. They found that the greatest changes to the alveolar process in the area of the buccal wall occurred within three to six months after tooth extraction.[2] In implant dentistry, these are limiting factors in daily practice. However, it is crucial to have sufficient hard and soft tissue both in quantity and in quality to achieve the goals of implant therapy.[5]

Preventive interventions can aid in counteracting bone loss and resorptive processes in order to preserve hard and soft tissue.[7] In this regard, alveolar stabilisation is a method performed during or after tooth extraction to minimise external resorption of the alveolar process, preserve bone, and promote and support bone formation within the extraction socket.[6] Various terms are used for this in the literature, such as alveolar ridge preservation (for three- or two-walled defects), socket preservation (for circularly intact alveoli), socket seal technique and alveolar preservation. The aim of these methods is to fill the fresh extraction socket with a bone grafting material and to achieve stabilisation of the alveolar walls.[9] In this regard, the use of bone substitute materials biologised with platelet-rich plasma (I-PRF and A-PRF) is described in the literature as a successful means to preserve bone and soft tissue and to support the healing process.[8, 11] In the following case report, socket preservation with CERASORB® Foam (curasan) and I-PRF (IntraSpin®, Bio-Horizons Camlog), obtained according to the Low Speed Centrifugation Concept (LSCC) of Prof. Shahram Ghanaati, was performed after extraction of tooth #12.[15] Similar cases were reported by Palm et al. and Al-Nawas et al. in the past.[13, 14] The implant was positioned and inserted six weeks later on the basis of external planning (DEDICAM, CAMLOG) and using a surgical guide with depth stop (CAMLOG Guide System®). An intra-oral scan (Medit i500®, Kulzer) was performed intra-operatively, and the first surgical phase concluded with submerged healing. During this period, a new type of healing abutment was fabricated entirely from PEEK material. After a healing period of three months, this PEEK healing abutment was used directly after implant exposure in order to shape the peri-implant soft tissue optimally and atraumatically in a few treatment steps. Finally, the prosthetic restoration was realised with a ceramic-veneered CAD/CAM-fabricated crown.

Case report

A healthy 55-year-old female patient presented to the practice with an unsalvageable tooth #12. Clinically, the oral situation was unremarkable. The patient reported that the crown was loose and that it rotated slightly. She also reported pain on biting. The radiographic evaluation revealed that the tooth had been endodontically treated and restored with a metal post. Dislocation of the post and core with the crown and a deep fracture were detected, and the patient was informed accordingly (Figs. 1 & 2). A few days later, tooth #12 was extracted gently and atraumatically with the aim of preserving the alveolar walls as far as possible. Special periotomes and instruments (KLACK set®, Geistlich Biomaterials) were used for this purpose (Figs. 3 & 4). Since an implant restoration was planned in this case, it was decided in advance, and together with the patient, that appropriate measures for bone preservation should be taken. The condition of the alveolus after extraction is an important criterion for deciding which treatment protocol should be used, that is,

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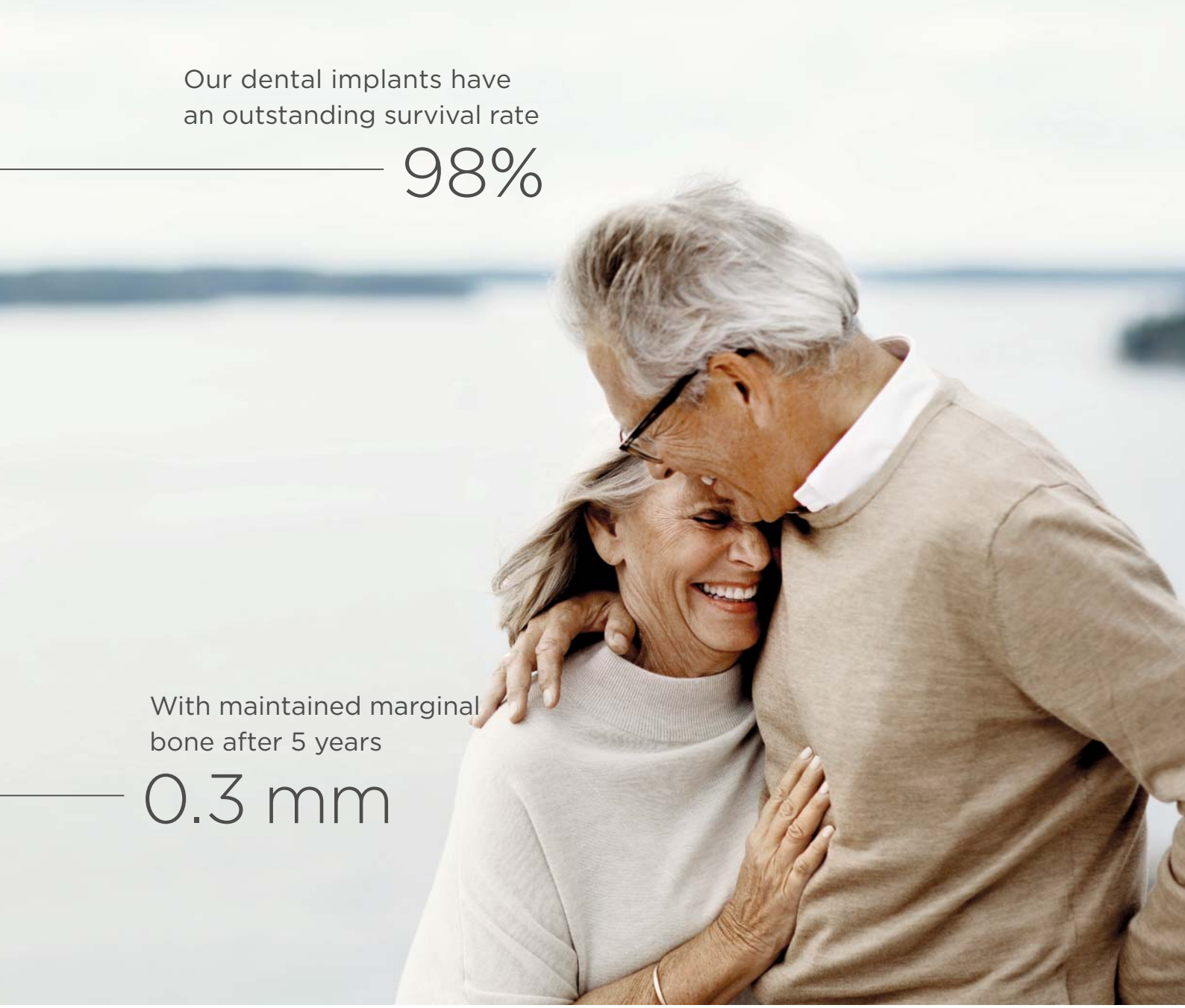

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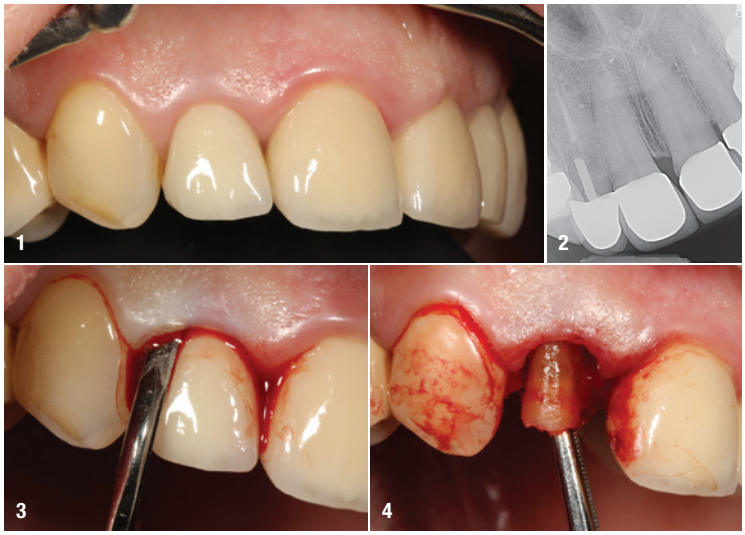


Fig. 1: Initial clinical situation of tooth #12. **Fig. 2:** Radiograph of tooth #12 showing failed endodontic treatment with the dislocated post restoration and deep complicated fracture. **Fig. 3:** Gentle detachment of marginal gingiva and periodontal ligament fibres using periotomes. **Fig. 4:** Atraumatic extraction of the tooth and the fractured fragment.

which bone grafting material with which resorptive properties should be used and when the implants should be placed. In the case described here, the alveolar bone could be preserved in all directions. The decision was made in favour of delayed immediate implant placement and the use of a bone regeneration material that is rapidly resorbed and quickly incorporated into the autogenous bone.

Socket preservation was performed with a β-tricalcium phosphate collagen matrix (CERASORB Foam), which was biologised in advance with I-PRF (platelet-rich fibrin concentrate; Fig. 5). In its hydrated, biologised state, the collagen matrix can be excellently shaped and adapted to the alveolar walls under as little compression as possible (Figs. 6 & 7). The augmentation site was covered crestally and sealed with a compressed A-PRF plug (Fig. 8). The site was then stabilised by means of cross-suturing (Fig. 9). Tight covering using the socket seal approach and a tissue punch was not necessary in this context. The gap was temporarily restored with an interim prosthesis, which was designed as a pontic in order to shape the soft tissue (Fig. 10). Lastly, a control radiograph was taken, and the optimal defect filling and almost structurally identical distribution of the matrix could be noted on the radiograph (Fig. 11). After the treatment, irritation-free, stable and, above all, pain-free healing was observed. As a result, planning for implant placement by means of CBCT (Orthophos XG 3D, Dentsply Sirona) could be carried out after only three weeks (Figs. 12 & 13). To achieve optimal 3D axial positioning of the implant in the vertical, mesiodistal and orovestibular directions, the CBCT/DICOM data sets were sent to an external planning centre (DEDICAM) via a secure channel and a surgical guide (CAMLOG® Guide, SMOP®, Swissmeda) was fabricated (Figs. 14 & 15).

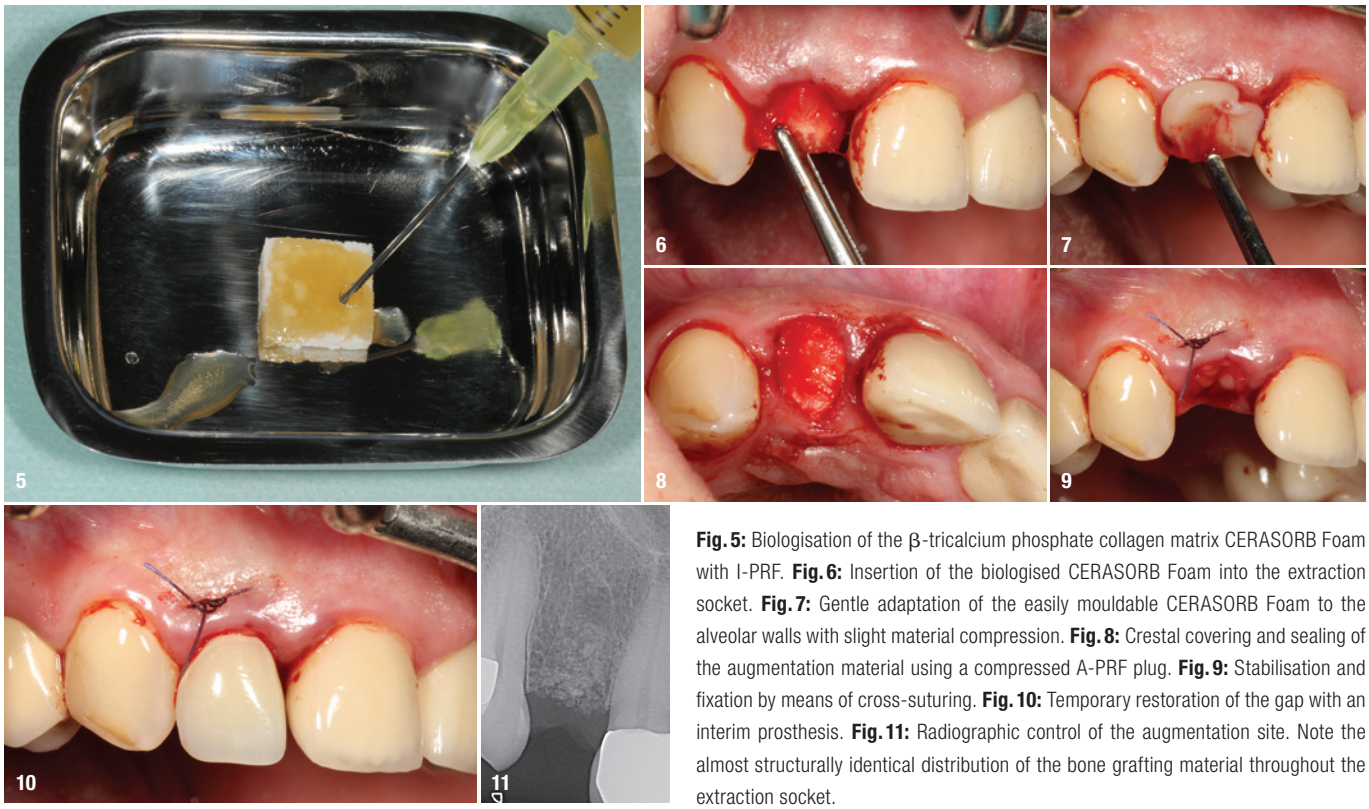


Fig. 5: Biologisation of the β-tricalcium phosphate collagen matrix CERASORB Foam with I-PRF. **Fig. 6:** Insertion of the biologised CERASORB Foam into the extraction socket. **Fig. 7:** Gentle adaptation of the easily mouldable CERASORB Foam to the alveolar walls with slight material compression. **Fig. 8:** Crestal covering and sealing of the augmentation material using a compressed A-PRF plug. **Fig. 9:** Stabilisation and fixation by means of cross-suturing. **Fig. 10:** Temporary restoration of the gap with an interim prosthesis. **Fig. 11:** Radiographic control of the augmentation site. Note the almost structurally identical distribution of the bone grafting material throughout the extraction socket.

An implant (CAMLOG PROGRESSIVE-LINE, CAMLOG; diameter: 3.8 mm; length: 13.0 mm) was chosen which would ensure sufficient high primary stability owing to its progressive thread design.

Six weeks after extraction and socket preservation, implant insertion in region #12 was performed under local anaesthesia. A crestal incision was made, and a flap was reflected in a minimally invasive manner. The surgical guide was put into position, and then the guide system and the 3.8 mm drill set (CAMLOG) were used to prepare the osteotomy in several steps to the planned length of 13 mm. Finally, guided implant placement was performed to a torque of 25 Ncm (Figs. 16–18). After final positioning of the implant (Fig. 19), the insertion post was removed and a PEEK scan body (CAMLOG) with the same diameter of the implant (3.8 mm) was inserted (Fig. 20). The implant and the jaws were then scanned intraoperatively (Medit i500® and Medit Link® software, Medit) to verify the position of the inserted implant (Figs. 21a & b). After scanning, the scan body was removed, the healing abutment was installed, the surgical site was tightly sutured for submerged healing and a dental panoramic tomogram (Orthophos XG 3D) was taken (Figs. 22a–c). During the healing phase of the implant, the scans were further processed for further planning (Fig. 23). The objective was to shape the soft tissue and to fabricate the definitive restoration in as few steps and as effectively as possible. Experience has shown that it is important to minimise insertion and extraction torque in order to protect and stabilise the peri-implant hard and soft tissue. This is essential for achieving long-term implant success, which, in the present case, was realised on the basis of the treatment protocol followed.

After an irritation-free healing phase of three months, the hard- and soft-tissue conditions were considered stable, and therefore the implant was exposed under local anaesthesia. Since the soft-tissue situation was considered quantitatively sufficient, the incision was made crestally. In collaboration with the external planning service centre (DEDICAM), a novel healing abutment was fabricated from PEEK during the healing phase and subsequently inserted. This one-piece healing abutment does not require further processing, thereby minimising possible sources of error and potential contamination (Fig. 24). The soft tissue was modelled in the coronal direction by means of a suspension suture, and the wound margins were fixed to the adjacent teeth by means of vertically modified backsuture (Fig. 25). Finally, a control radiograph was taken, and the interim prosthesis was adapted to the new situation (Fig. 26). With the customised healing abutment and the corresponding emergence profile, the soft tissue was entirely shaped within

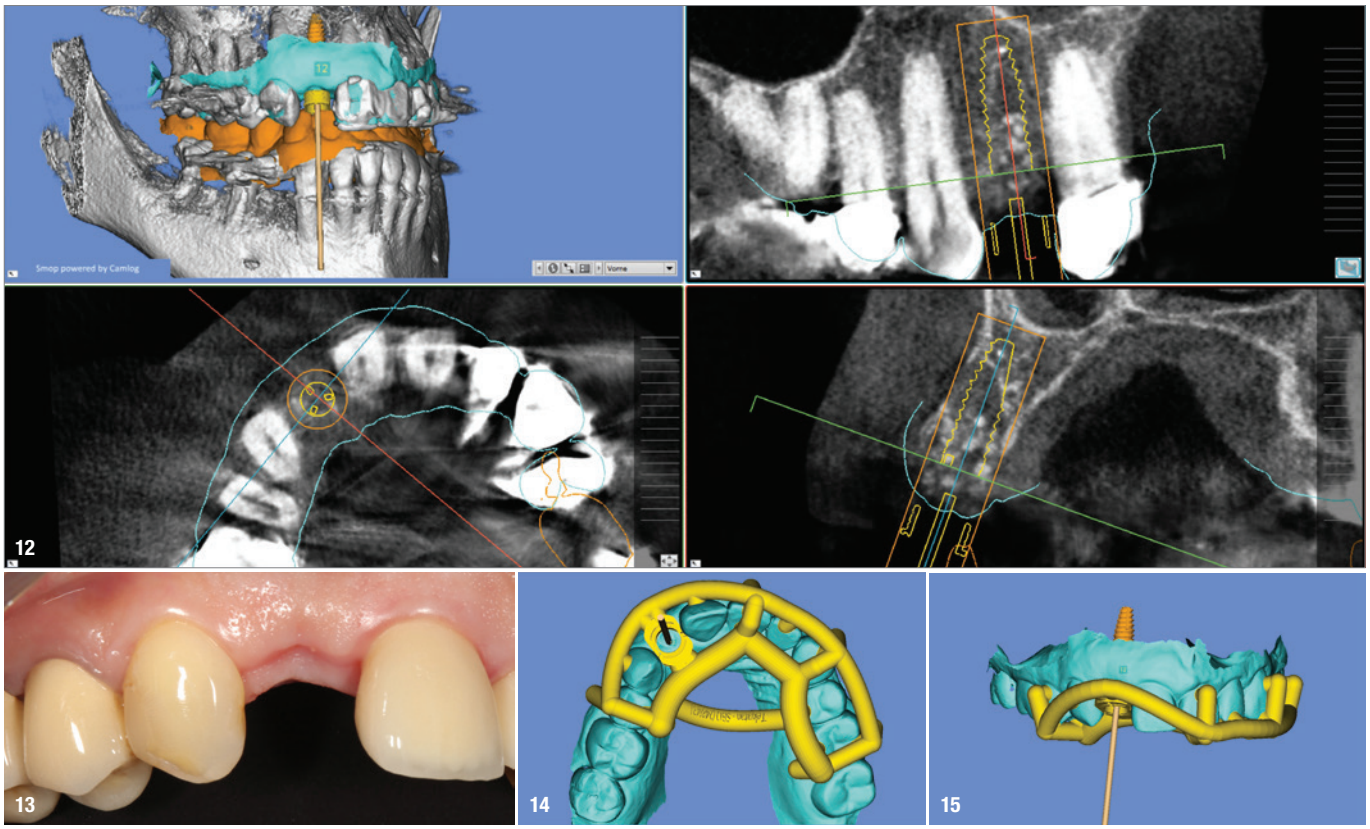
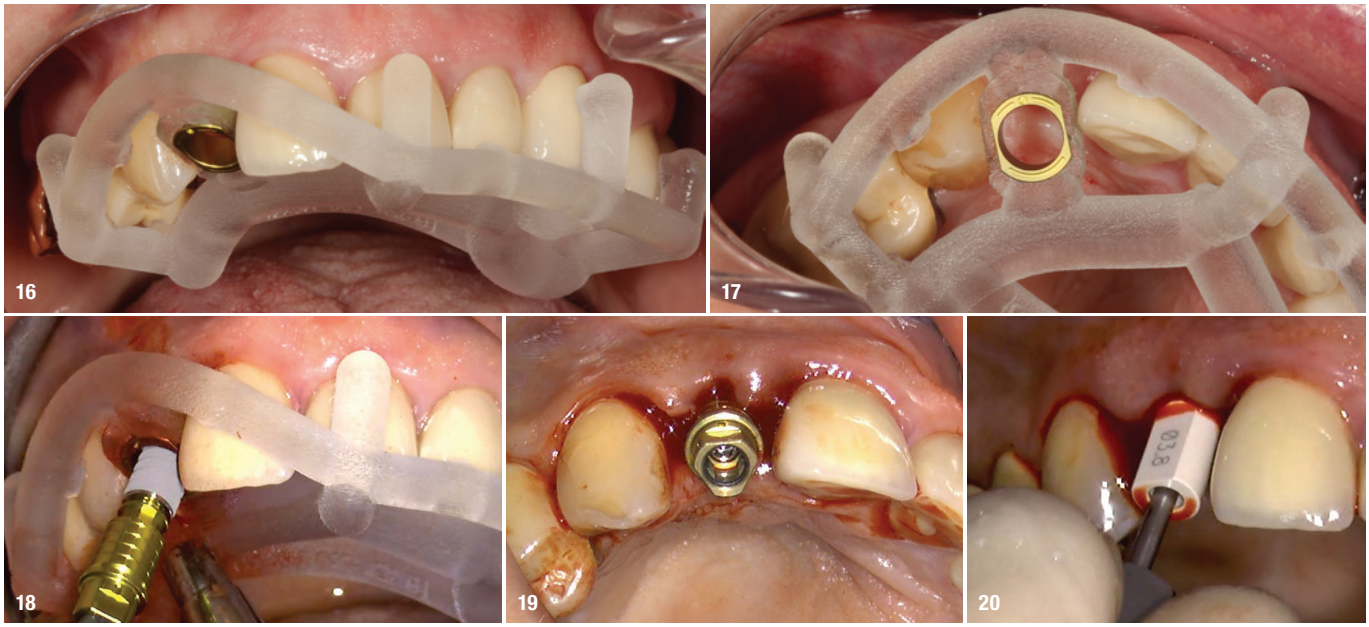
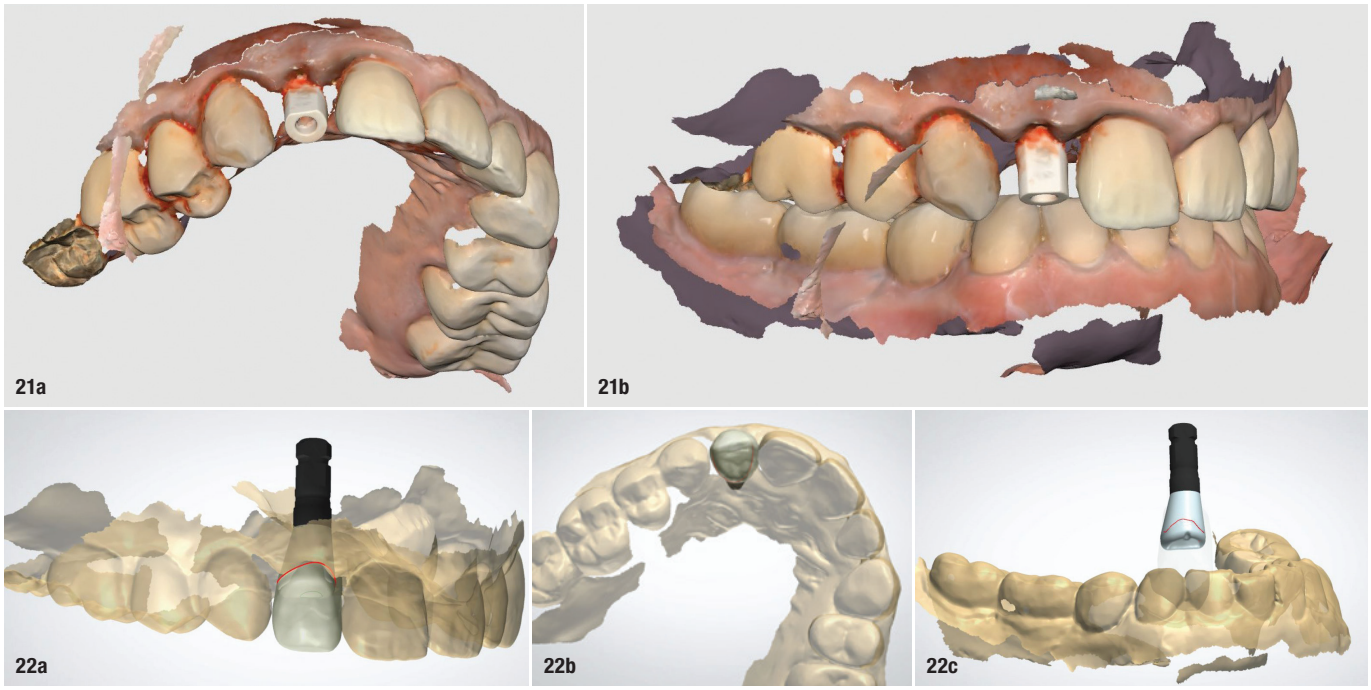


Fig. 12: Evaluation of 3D diagnostics showed sufficient stable bony conditions in all directions. **Fig. 13:** Clinical situation before implant placement. **Figs. 14 & 15:** Planning of the surgical guide (CAMLOG Guide), vertical and ventral views.

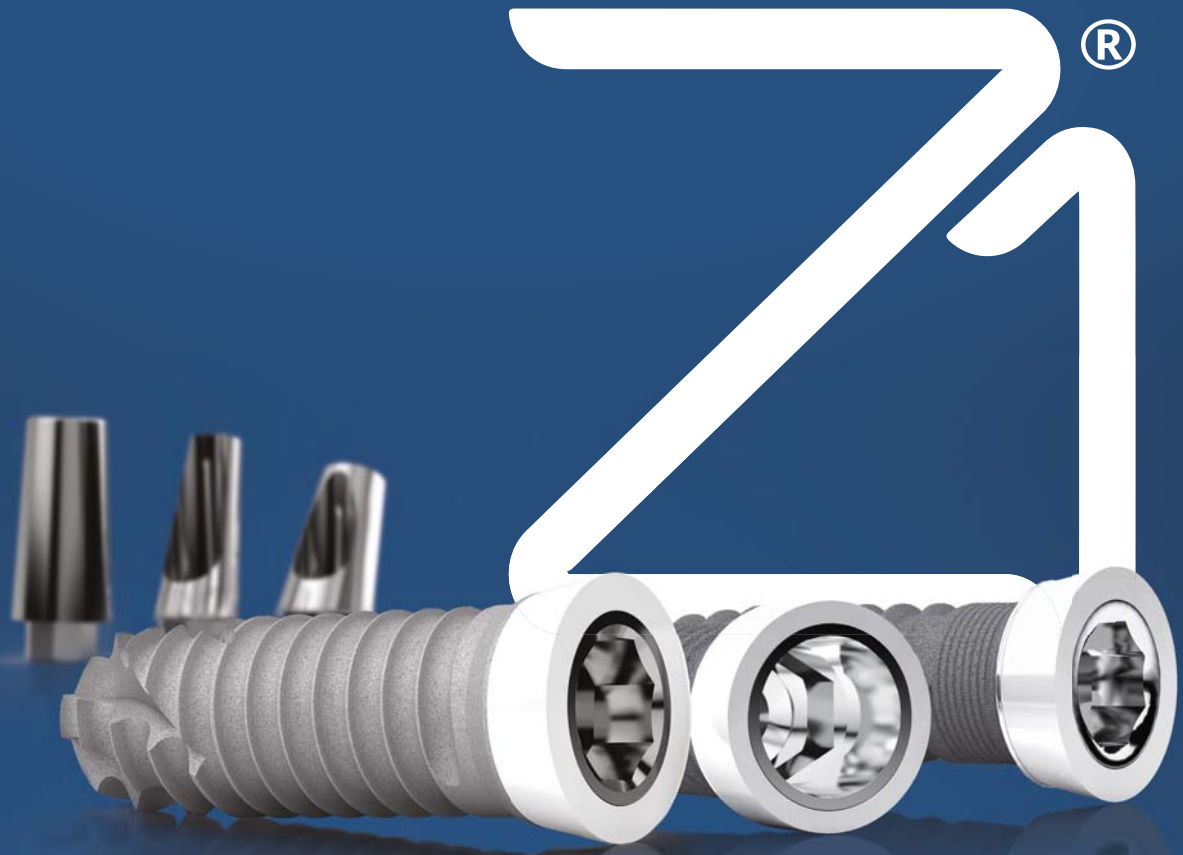


Figs. 16–18: Ventral and crestal views of the inserted surgical guide and guided implant placement in region #12. **Fig. 19:** Final position of the implant in region #12. **Fig. 20:** Insertion of the PEEK scan body.

three weeks, and within the healing period. No further treatment steps, impressions or other measures were necessary. Not only is the treatment protocol shortened in this way, but the soft tissue is also protected from stress. The healing abutment is not radiopaque; thus, its position cannot be checked on radiographs at present. However, the correct position of the fixation screw is clearly visible. In this case, the focus was on the implant itself, the bone and tissue regeneration, and the control of the healing of the implant site after three months. There was homogeneous and continuous bony healing of the implant site throughout (Fig. 26).



Figs. 21a & b: Determination of the final implant position by means of intra-oral 3D scanning. **Figs. 22a–c:** Different views: buccal view **(a)**, vertical view **(b)**, maxilla segmented on to the planned restoration **(c)**. The emergence profile of the healing abutment was matched to a virtual crown and designed accordingly (3Shape CAD Software®).



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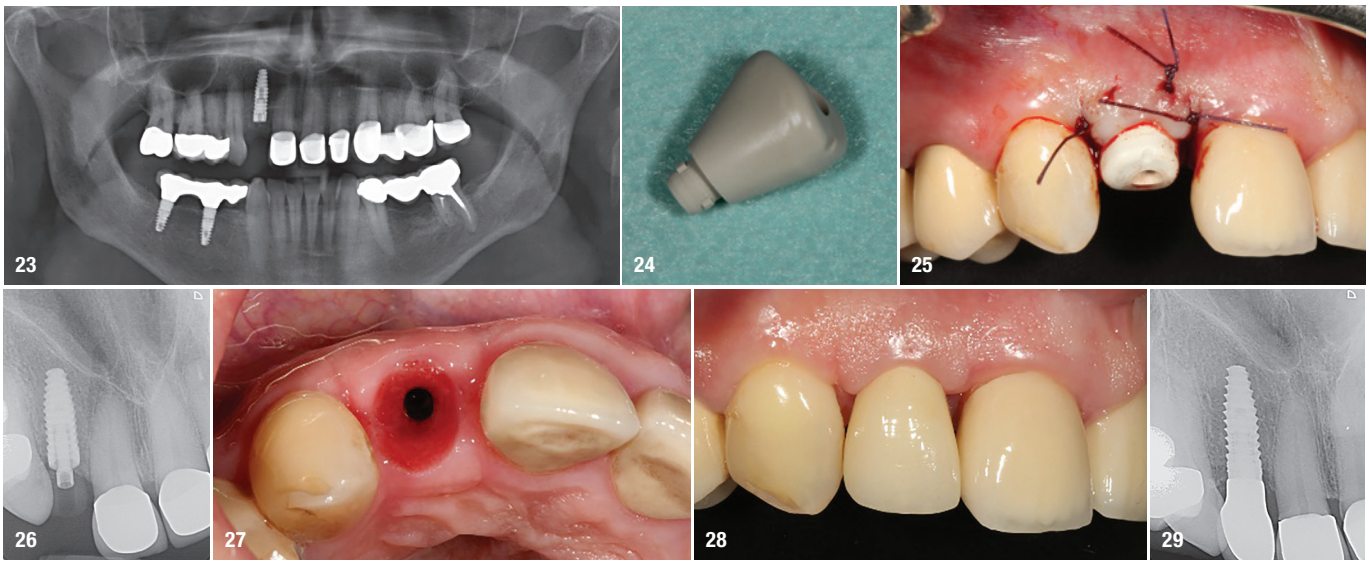

Fig. 23: Dental panoramic tomogram after implant placement in region #12 and post-op control at three months. **Fig. 24:** Healing abutment made of PEEK. **Fig. 25:** Inserted individual healing abutment and fixation of the peri-implant mucosa. **Fig. 26:** Periapical radiograph for radiographic control of the implant in region #12. **Fig. 27:** Vertical view shows the individually shaped mucosa immediately before the installation of the definitive superstructure. **Fig. 28:** Buccal view of the definitive crown in region #12. **Fig. 29:** Radiographic control of the implant in region #12 after installation of the definitive crown.

After a healing period of nearly three months, the definitive restoration of the implant in region #12 was carried out. A fully-veneered zirconia crown was fabricated in a CAD/CAM procedure. The customised zirconia abutment was bonded to the titanium base. The crown was then cemented onto the abutment. Following the final restoration, a final radiographic control was taken. Since the crown was placed immediately after customisation, further aesthetic remodelling of the approximal peri-implant mucosa is to be expected over time. Overall, a non-irritant, aesthetically pleasing and satisfactory result was achieved (Figs. 27–29).

Conclusion

Restoration in the anterior region is one of the greatest challenges in implant dentistry. The demands and expectations of patients regarding the aesthetic zone are very high.[4,7,10] In order to meet these expectations and to achieve an aesthetically predictable and prognostically reliable aesthetic long-term result, it is vital to ensure the preservation of the soft tissue. Extensive augmentation of the bone and soft tissue should be avoided if possible, and the tissue should not be put under stress after implant placement.[1] Preventive, predictable and minimally invasive measures aid in preserving bone and soft tissue. In the present case, implant surgery in the aesthetic zone was successfully carried out by means of a gentle extraction technique, alveolar management adapted to the situation using β-tricalcium phosphate collagen matrix (CERASORB Foam) biologised according to LSCC, delayed implant placement, as well as direct soft-tissue management after exposure using a prefabricated customised healing abutment. The case demonstrates how adequately sized and contoured hard and soft tissue for implant restoration in the aesthetically relevant zone can be achieved in preventive and efficient treatment steps that are kept as short as possible.

Author details

Literature

about the author

Dr Haki Tekyatan is a Germany-based dentist who specialises in implant dentistry and maxillofacial surgery. He is currently in private practice in the German city of Simmern.

contact

Dr Haki Tekyatan
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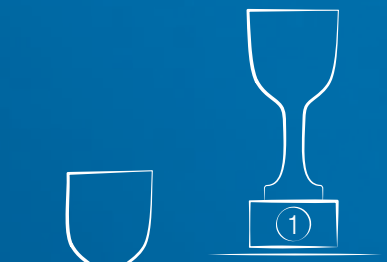

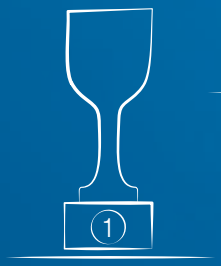

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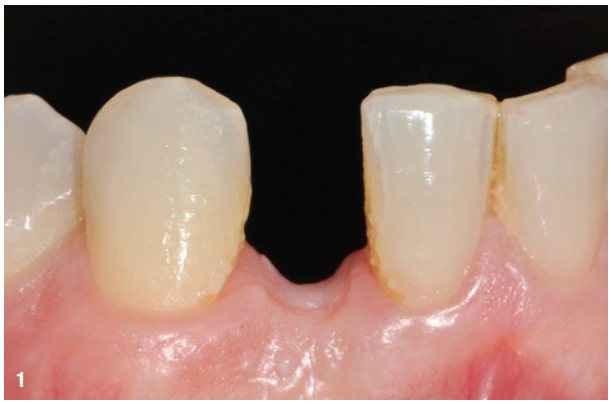
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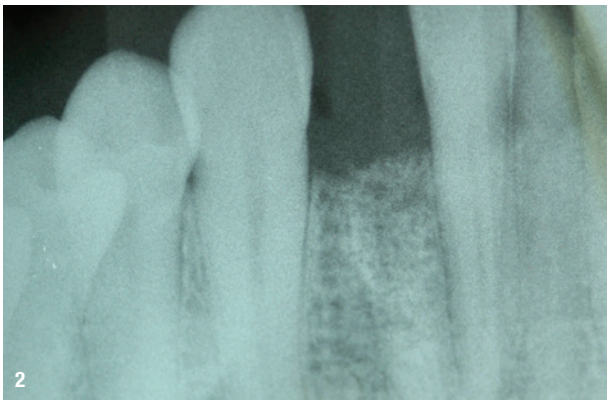
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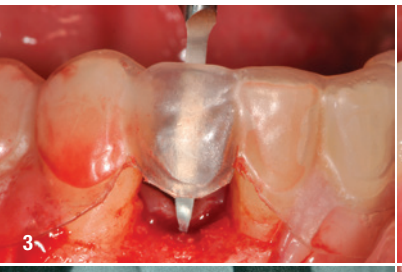
Initial situation and treatment planning

A 40-year-old male patient with a missing mandibular right lateral incisor and grafted area requested restoration with a dental implant. The challenge with this type of restoration is the limited space available and the proximity of the adjacent teeth. The clinical evaluation revealed the limited space (Fig. 1), and the periapical radiograph taken before the treatment showed both the grafted area into the bone and the limited space (Fig. 2). The treatment plan involved conventional implant placement using an OsseoSpeed EV implant (Dentsply Sirona) and immediate provisionalisation using a Temporary Abutment EV (Dentsply Sirona), and for the definitive restoration, an Atlantis Crown Abutment (Dentsply Sirona) was planned to be used to restore the appearance and function of the missing tooth.

Implant placement

In the first step of implant placement, the biological aspects according to the 3A-2B rule were evaluated using a surgical guide (Fig. 3). The first drilling position was marked to obtain 2B and to create the osteotomy angulation using the Precision Drill EV (Dentsply Sirona). The angulation was confirmed and the implant depth of the osteotomy was prepared with the Twist Drill EV (Dentsply Sirona; Fig. 4). The depth of the osteotomy was verified using the Implant Depth Gauge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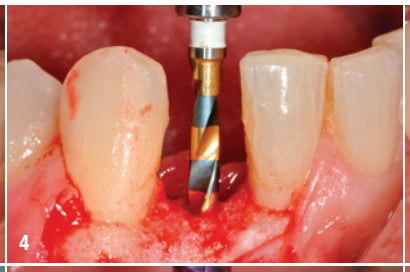
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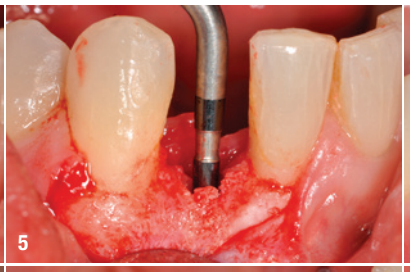
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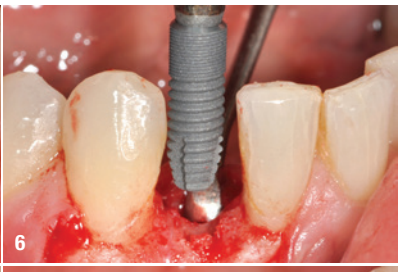
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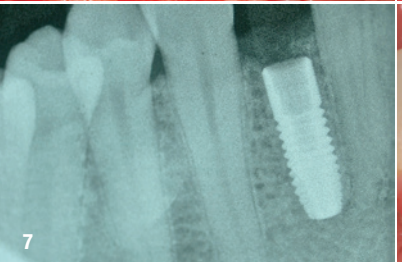
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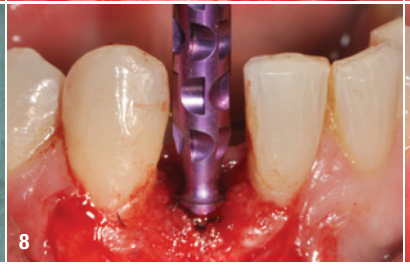
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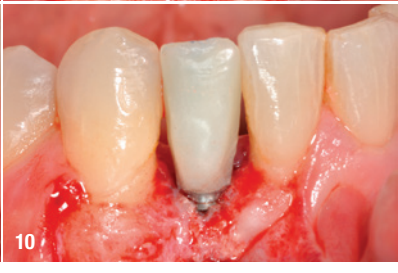
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EV (Dentsply Sirona; Fig. 5). Implant placement was then performed with an OsseoSpeed EV 3.6 implant of 11 mm in length (Fig. 6). The remaining interproximal bone was expected to provide support for the interproximal papillae. The periapical radiograph taken immediately after implant insertion confirmed that the implant had no contact with the adjacent roots (Fig. 7). Thereafter, an implant-level impression was taken using the Implant Pick-up Design EV (Dentsply Sirona), a self-guiding impression component that engages into the implant, in order to obtain the information regarding the implant's position (Fig. 8). The Temporary Abutment EV was modified in the shoulder area to avoid contact with the interproximal bone and to allow for a correct fit (Fig. 9). Using a dental dam, the immediate temporary restoration was fixed with acrylic resin (Fig. 10). After fixation, it was removed, finished, polished and repositioned with finger-light force.

Definitive prosthetic restoration

The patient was called in for an appointment one week after surgery. At that point, the fit of the temporary restoration was considered satisfactory (Fig. 11). Figure 12 shows the digital planning for the Atlantis Crown Abutment in zirconia with correct space for ceramic layers. The definitive restoration was produced in the dental laboratory with a view to creating harmony with the adjacent teeth (Fig. 13). Space for the interproximal papillae was created. The screw-retained abutment with lingual access can be seen in Figure 14. The provisional restoration was replaced with the definitive one (Fig. 15). The subgingival portion of the abutment provided soft-tissue support, and space for the interproximal papillae was created. The Atlantis Crown Abutment was torqued to 25 Ncm (Fig. 16). The lingual screw access hole was first covered with filling material (PTFE) and after that with a composite. Afterwards, another radiograph was taken of the implant with the definitive Atlantis Crown Abutment in place (Fig. 17). In Figure 18, the final outcome with the definitive restoration can be seen, showing the correct soft-tissue contour and the filling of the interproximal space. Also, the ceramic perfectly mimicked the colour of the adjacent teeth.

about the author

Fernando Rojas-Vizcaya, DDS, MS, graduated from the University of North Carolina at Chapel Hill, USA, where he completed a three-year postgraduate qualification in prosthodontics and a one-year scientific research fellowship in dental implants in the prosthodontics programme. He currently collaborates with the university as an assistant professor. He also studied oral medicine and oral implantology at the Complutense University of Madrid in Spain and completed a programme in oral surgery at the Gregorio Marañón university hospital in Madrid. His research is focused on the development of protocols in oral implantology, complete rehabilitation and virtual treatment using new digital technologies. He maintains a private practice limited to prosthodontics and dental implant treatment in Castellon in Spain.

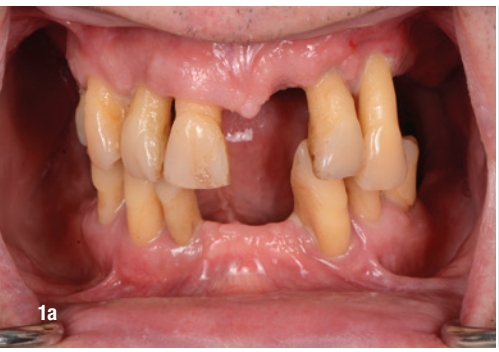
contact

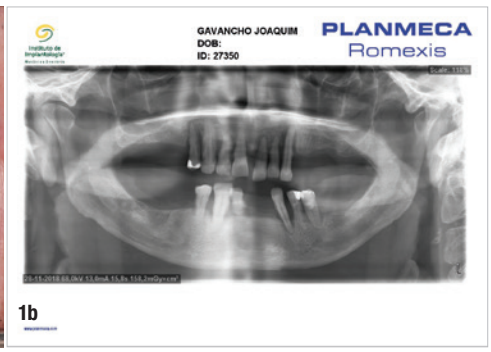
Dr Fernando Rojas-Vizcaya
Clínica Dental Fernando Rojas
Vizcaya
Castellon, Spain
+34 964 257200
www.prosthodontics.es

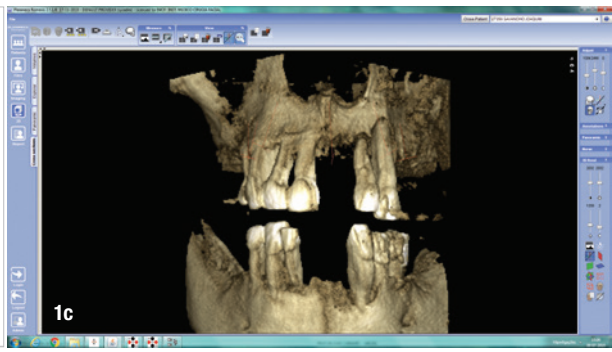
Author details

Immediate fixed full-arch rehabilitation of periodontitis patients

Prof. João Caramês, Portugal







Figs. 1a–c: Initial pre-op dental and osseous conditions. Frontal view **(a)**, panoramic radiograph **(b)**, CBCT scan visualising the osseous and dental anatomical conditions **(c)**.

Background

Untreated edentulism can have a profound impact on a patient's oral health, general health and well-being by causing functional limitations, and it can lead to socio-psychological impairments, metabolic changes and even a reduced life expectancy.[1–4] Implant-supported complete dentures have established themselves as a viable treatment modality for edentulism, since they lead to an improved quality of life and patient satisfaction and are distinguished by long-term clinical success.[5,6] Among these, implant-supported fixed complete dentures (IFCDs) have demonstrated long-term implant survival rates of ≥95% and ≥97% after five years in the maxillary arch and after ten years in the mandibular arch, respectively.[7] Immediate placement and loading represent an increasingly established option for reducing the overall time required for IFCD rehabilitation for both the patient and the clinician. Optimised implant surface properties and designs result in optimised primary stability and accelerate bone integration irrespective of bone quality, supporting immediate protocols.[8–10] Immediate loading protocols might require specific placement and loading criteria in order to ensure clinical efficacy.[11] Meta-analyses of clinical data indicating equivalent five-year post-loading implant survival rates when comparing immediate and delayed loading protocols suggest that these criteria can be achieved in the case of immediately loaded IFCDs.[12–14]

IFCD rehabilitation requires the careful consideration of a variety of factors, including the available surgical protocols, prosthodontic options, patient's medical condition and patient's preferences. Specific consideration should be given to the osseous condition, potential risk factors, patient's expectations and experience of the treating clinician.[11] With the aim of standardising treatment approaches for IFCDs and in agreement with the conclusions of the sixth ITI Consensus Conference, Caramês recently reported on a clinical decision support system (CDSS) to standardise the treatment approach for IFCDs based on the osseous anatomical conditions and level of alveolar atrophy of the patient.[15,16] This system classifies five levels of treatment complexity and is applicable for straightforward cases with sufficient bone quantity to complex cases with limited bone quantity and quality. The CDSS further provides specific guidance for the choice of implant rehabilitation scheme and assists in identifying any need for bone augmentation to improve the osseous support in the context of the patient's facial aesthetics.[16]

Consideration of the local alveolar anatomy and bone quality after tooth extraction may become even more important in the case of any compromised endodontic or periodontal conditions prior to treatment.[17,18] A growing amount of evidence suggests that successful implant osseointegration of immediately placed implants can be reliably achieved even in infected sites. Clinical workflows for such conditions need to allow for additional measures, such as disinfection and debridement of the extraction sites before implant placement.[18] Surgical manipulations such as alveoloplasty at placement to potentially reduce

the overall risk of implant failure may be considered as well.[19] A defined clinical workflow to systematically address the immediate rehabilitation of the periodontally atrophied maxillary and mandibular arches in a standardised manner is however still lacking. In this case report, the author will illustrate how the application of a CDSS may help to define and standardise the clinical workflow and rehabilitation plan for the immediate transition from a failing dentition associated with periodontally atrophied osseous conditions into a bimaxillary fixed full-arch restoration. The aim is to illustrate the complete set of steps and highlight the most important aspects of the workflow and discuss them in the context of the most recent conclusions and consensus statements from the literature using the Straumann® Pro Arch system.

Case presentation

Initial situation and medical history

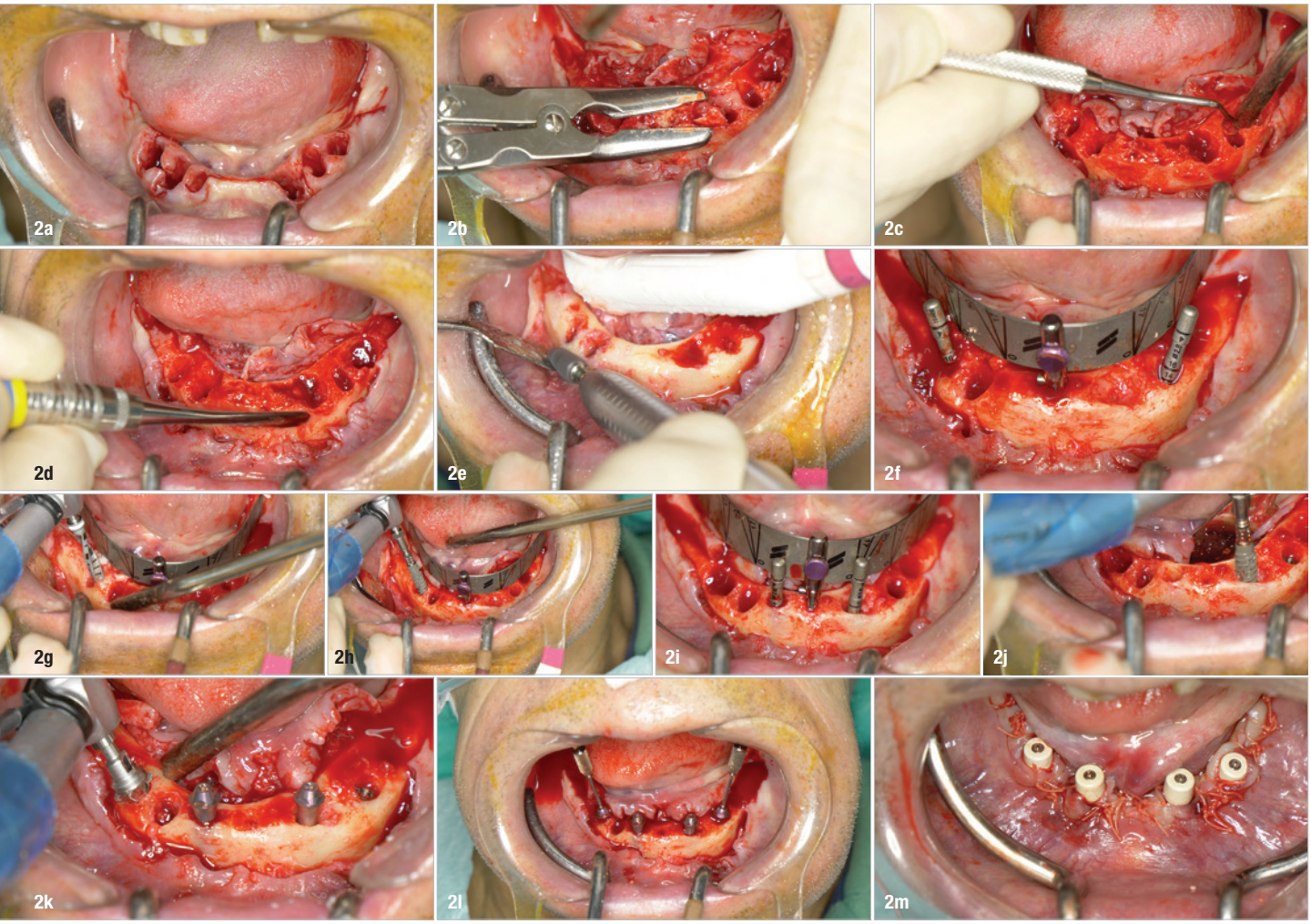
A 60-year-old male patient with partial remaining dentition, teeth #15–11, 22, 23, 33–35, and 45–43, and lacking any type of prosthetic restoration presented at the Implantology Institute, the author's clinic in Lisbon in Portugal. Dental examination revealed generalised severe chronic periodontitis in the progressed stage associated with vertical loss of soft tissue, bleeding on probing, severe loss of osseous support radiographically down to the apical regions and Grade III tooth mobility. Assessment of the osseous conditions by CBCT further revealed moderate horizontal bone atrophy in both jaws. Abundant and thick keratinised soft tissue was present in the edentulous segments of the alveolar ridge. The initial dental and osseous conditions of the patient prior to treatment are illustrated in Figures 1a–c. The condition of the residual dentition did not allow for any predictable prosthetic restoration. The patient's general health was evaluated as good. Anamnesis did not reveal any systemic or local absolute contra-indications for endosteal implant therapy. After the patient had been informed of the different treatment options, he expressed a strong preference for an implant-supported fixed prosthetic restoration without palatal coverage as well as a desire to limit prolonged edentulous phases during treatment. Based on the patient's medical condition and preference, immediate fixed full-arch restoration (Straumann® Pro Arch) with immediately loaded metal-reinforced acrylic provisionalisation and definitive zirconia prostheses was proposed.

Surgical procedure

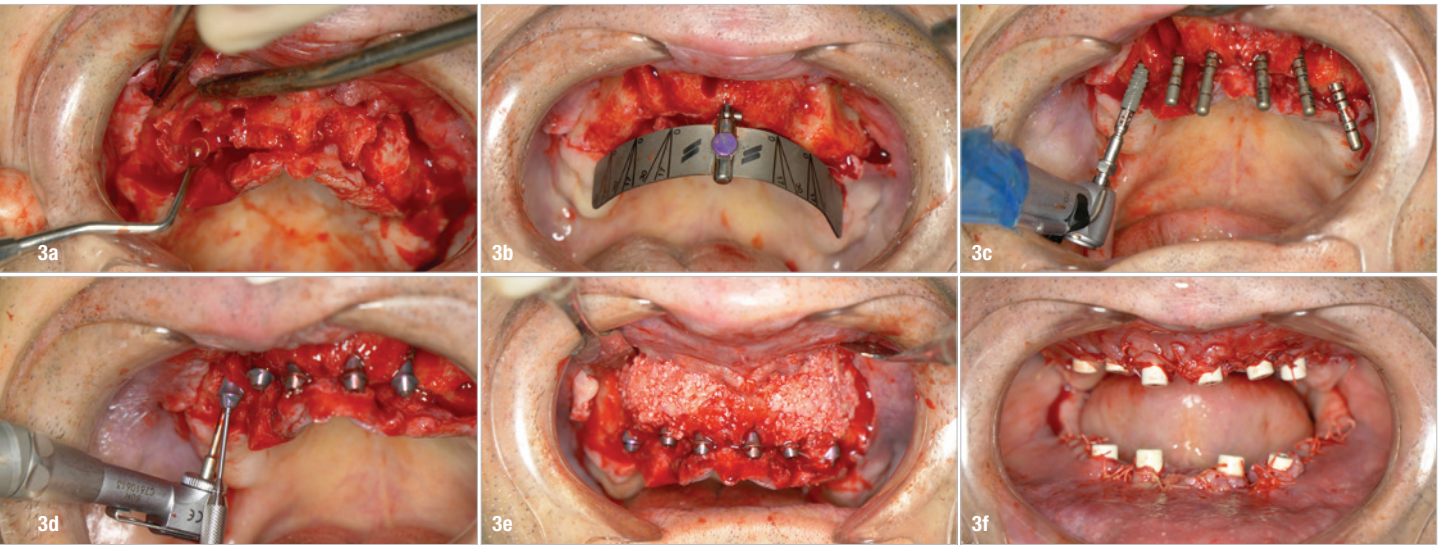
The procedure was performed as a bimaxillary full-arch restoration, involving immediate implantation and immediately loaded provisionalisation. Planning was performed based on the patient's osseous anatomy by means of CBCT scans and panoramic radiographs and considering the patient's facial aesthetics by means of face scans and digital photography. According to the detailed mesiodistal 2D cross sections of the CBCT scans, the available bone height and width in the anterior maxilla were 14.05–18.06 mm and 6.36–8.36 mm, respectively. The posterior maxilla displayed moderate bone resorption, having a bone height and width of 10.63–10.91 mm and 5.76–6.36 mm, respectively. The corresponding mandibular osseous height and width were 13.0–23.0 mm and 6.2–9.2 mm, respectively, in the anterior region and 9.6–12.0 mm and 6.4–8.4 mm, respectively, in the posterior region. According to the applied CDSS for full-arch rehabilitation, the patient's osseous conditions were classified as Class II with moderate complexity for both the mandibular and maxillary arch.[16] Accordingly, rehabilitation with six maxillary and four mandibular implants with angulation of the implants in the posterior atrophic segments of the jaws was proposed. The detailed analysis of the facial aesthetics further suggested the need for bone augmentation in the anterior apical maxilla to improve the inadequate lip support caused by the progressing bone defect. A conventional and non-guided open-flap treatment approach was chosen. Detailed planning and verification of implant types and positions were performed based on a 3D planning model (Implant Studio, 3Shape).

Mandibular procedure

The mandibular treatment procedure involved the creation of an extended



Figs. 2a–m: Surgical procedure in the mandible. Situation after tooth extraction **(a)**. Preparation of the alveolar crest, including removal of sharp edges after elevation of a mucoperiosteal flap, thorough debridement of extraction alveoli, removal of periosteum and alveoloplasty **(b–d)**. Placement of four implants involving placement of a surgical guide, verification of the correct depth and angulation of the osteotomies using alignment pins, placement of bone-level implants and preparation of the emergence profile using a bone profiler **(e–k)**. Placement of the screw-retained abutments **(l)**. Primary wound closure after placement of protective caps **(m)**.



Figs. 3a–f: Surgical procedure in the maxilla involving tooth extraction **(a)**, placement of a surgical guide **(b)**, implant placement **(c)**, placement of screw-retained abutments **(d)**, guided bone regeneration **(e)**, placement of protective caps and primary wound closure **(f)**.

mucoperiosteal flap and exposure of the complete alveolar crest after extraction of the residual dentition (Fig. 2a). Next, the alveolar crest was flattened by manual removal of any sharp bone edges with a Rongeur (Fig. 2b). The extraction alveoli were thoroughly debrided using sequences of manual curettage and irrigation with saline in order to remove any infected tooth root remnants and granulation tissue (Fig. 2c). Any possible remnants of inflammatory tissue were removed from the alveolar crest using a sharp periosteal elevator (Fig. 2d). Alveoloplasty of the buccal and occlusal aspects of the alveolar crest was performed with a round bur in order to prepare the alveolar crest for the implantation procedure (Fig. 2e). The implant treatment plan included placement of two straight implants in positions #42 and 32 and two angulated posterior implants in positions #44 and 34 (Straumann BLX; diameter: 4.5 mm; length: 14.0 mm; RB; SLActive; Roxolid). The position and angulation of the osteotomies were determined by use of a surgical guide (Straumann® Pro Arch Guide; Fig. 2f) and performed according to the manufacturer's instructions. The position, depth and angulation of the osteotomies were verified prior to implant placement using verification pins (Fig. 2g). Next, the implants were placed at subcrestal level to a torque of 35 Ncm (Figs. 2h–k). Coronal emergence profiles of the posterior implants were adapted with a bone profiler (Straumann; Fig. 2l). Implants were subsequently restored with screw-retained abutments (RB/WB; straight: 0°; angulated: 17°; diameter: 4.6 mm; gingival height: 3.5 mm; Straumann) and protective caps (diameter: 4.6 mm; Straumann), followed by primary wound closure (4/0 VICRYL RAPIDE, Ethicon; Fig. 2m).

Maxillary procedure

Maxillary treatment was performed directly after the mandibular procedure and was carried out analogous to the mandibular procedure. The treatment sequence involved removal of remaining teeth, mucoperiosteal flap elevation, and thorough debridement and degranulation of the resulting extraction alveoli (Fig. 3a). Next, any sharp edges of the alveolar crest were manually removed and the osteotomies were prepared in accordance with the positions and angulations indicated by the surgical guide (Fig. 3b). Osteotomy preparation and verification were followed by placement of six Straumann BLX implants (diameter: 3.75 mm; length: 12.00 mm; RB; SLActive; Roxolid) in positions #16, 14, 12, 22, 24 and 26 to a torque of 35 Ncm. The posterior implants were placed at an angle (Fig. 3c). All implants were restored with screw-retained abutments, and bone augmentation of the anterior alveolar process was carried out using a xenograft (Straumann XenoGraft, 0.5 mm granules) and a collagen membrane (Straumann Membrane Flex; Figs. 3d & e), followed by placement of protective caps and primary wound closure (Fig. 3f).

Prosthetic restoration

Immediate provisional prosthetic restoration with full-arch metal-reinforced acrylic prostheses was performed directly after primary wound closure and involved open-tray impression taking followed by immediately loaded provisional restoration. Specifically, impression posts were mounted and the wound margins were protected with dental dams (Fig. 4a). Next impression posts were splinted using cold acrylic (Kiero Form, Kuss Dental) to maintain the alignment of the impression posts, followed by filling of the detailed contours of the implants by syringe application of elastomeric impression material and standard silicone impression material (AFFINIS putty super soft and regular body, COLTENE; Fig. 4b). After the pickup impression, the acrylic provisional prostheses fabricated by an in-house laboratory (Labimplant) were adapted and screw-retained on to two titanium copings (Fig. 4c) in closed bite position using cold acrylic. Next, the remaining copings were adapted and a metal reinforcement was fabricated in the subsequent hour by the in-house laboratory as support for the provisional prostheses. The installed provisional restoration is shown in Figure 4d. Definitive restoration with screw-retained monolithic zirconia prostheses with buccal porcelain veneering was performed at the six-month follow-up.

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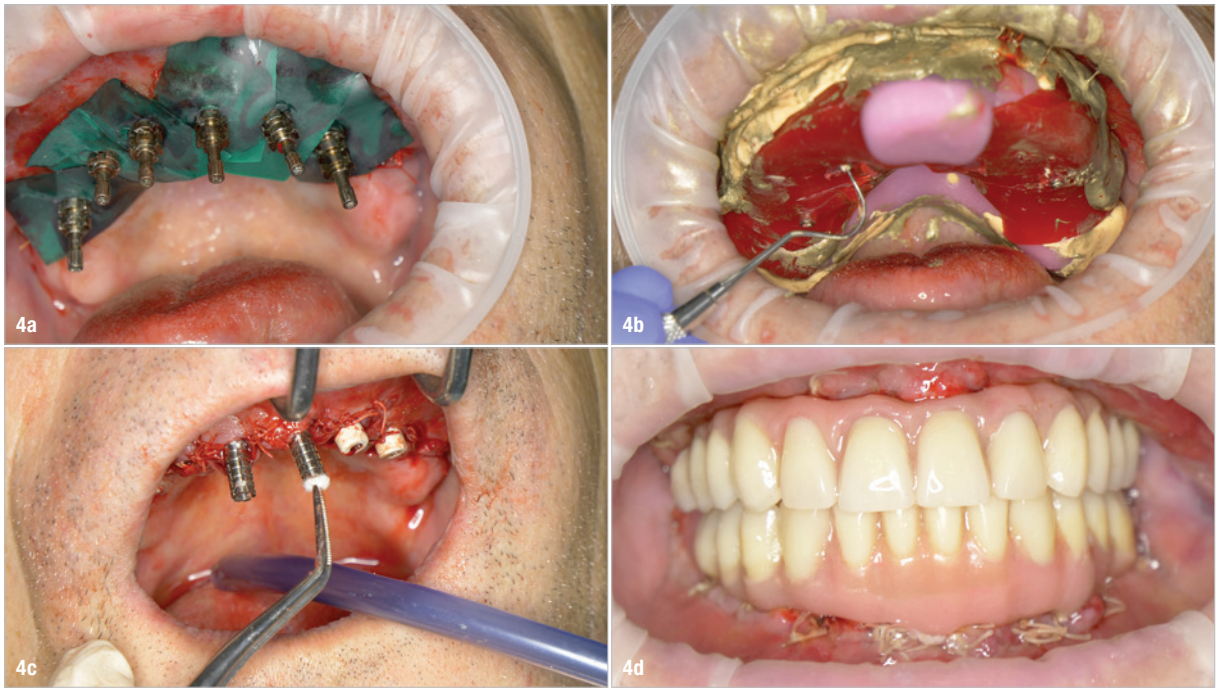

Figs. 4a–d: Open-tray impression taking and immediate provisionalisation involving placement of impression posts and coverage of wound margins with dental dams **(a)**, impression taking after splinting of impression posts using cold acrylic **(b)**, placement of titanium copings and mounting of acrylic provisional prostheses **(c & d)**.

Visual and radiographic assessment indicated that all implants had successfully osseointegrated with no signs of inflammation. Definitive restoration started with open-tray impression taking of the fully healed maxillary and mandibular arches with screw-retained copings in place (Figs. 5a & b). Abutment-level impressions of the detailed soft-tissue contours with splinted impression posts in place were taken with standard silicone impression material (AFFINIS putty super soft and regular body; Fig. 5c). The prosthetic procedures followed the standardised protocol recently reported by Caramês et al.[20] The definitive restoration was designed and milled by CAD/CAM with a zirconia structure (Prettau, Zirkonzahn) with feldspathic veneering porcelain (ICE Zirkon Ceramics, Zirkonzahn) on the non-functional buccal areas. The prosthetic restoration fitted with the implant base optimally (Figs. 5d & e), and the final aesthetic outcome was considered satisfactory (Fig. 5f).

Discussion and conclusion

With this case report, the author has aimed to illustrate a possible workflow for a bimaxillary fixed full-arch restoration using immediate placement and immediate loading in a partially edentulous periodontitis patient with atrophied bone. The most important aspects of the workflow are as follows: 1) The decision for the treatment plan was guided by a CDSS based on the anatomical osseous dimensions of the alveolar arches (Caramês classification).[16] 2) The concept involved immediate placement and loading in extraction sites of teeth affected by chronic periodontitis. 3) Horizontal contour augmentation of the apical aspects of the anterior maxilla was performed based on an analysis of the patient's facial aesthetics in order to provide lip support. 4) Screw-retained zirconia restorations were chosen after immediate provisionalisation with metal-reinforced acrylic prostheses.

The choice for the specific type of implant rehabilitation was guided by an osseous anatomy-based CDSS for full-arch restoration.[16] Compared with the *SAC Classification in Implant Dentistry*, which helps clinicians to identify the degree of complexity and potential risk involved in individual cases, this type of system gives additional recommendations for the specific type of rehabilitation within the group of full-arch restorations. The system is supported by the current state of knowledge on mandibular and maxillary full-arch restorations and consensus statements of the recent sixth ITI Consensus Conference.[15,16] According to the CDSS, the patient was classified as treatment option IIb, defining the placement of four and six implants in the mandible and maxilla, respectively. Posterior implants in the individual arches were tilted by 30°. The tilted placement of implants as part of full-arch rehabilitation in order to reduce prosthetic cantilevers and prevent additional surgical interventions can be considered well established. A recent consensus report concluded that for IFCD rehabilitation axial or tilted implants can be considered equivalent with regard to implant and prosthetic survival and complication rates, peri-implant marginal bone loss, and the risk of soft- and hard-tissue complications.[21]

Systematic reviews on immediately loaded full-arch rehabilitation furthermore indicate that in the maxilla tilted implants have a favourable short-term prognosis, including maintenance of the crestal bone level, in comparison with conventional axially placed implants after one year of function.[22,23]

In addition, this case illustrates the concept of immediate placement in extraction sockets of teeth affected by chronic periodontitis. Such condition is considered challenging, since periodontitis has been classified as a risk factor for peri-implant disease.[24] Moreover, implant placement in extraction sites of periodontally or endodontically compromised teeth has been discussed as a risk factor for microbial interference with implant osseointegration.[25] In order to prevent bone resorption caused by delayed placement protocols, clinicians have recently started to adopt immediate implantation in infected sites.[18,26] Chrcanovic et al. recently reviewed the existing evidence on immediate placement in infected sites.[18] They concluded that such implants might not display a higher risk of implant failure compared with implants placed in non-pathological extraction sites as long as meticulous cleaning and debridement of the extraction sites, along with the application of local antiseptics and systemic antibiotics, are implemented in the treatment protocols.[18] Another study on immediate placement in subjects with untreated periodontal disease investigating single, bridged and full-arch rehabilitation with a follow-up period of five years concluded similarly that immediate placement under such conditions might be clinically feasible.[27] Concerning immediate IFCD treatments, Li et al. performed an implant survival study in relatively young adults with generalised aggressive periodontitis and reported a five-year clinical survival rate of 98.7%.[28] Furthermore, Malo et al. reported average two-year clinical survival rates of 97.7% for maxillary and 94.8% for mandibular implants placed in sites that were compromised by dehiscences, fenestrations and periodontitis and reported lower clinical survival rates in the periodontally compromised sites.[29] Pałka and Lazarov performed a study on IFCDs immediately loaded on to bicortically stabilised implants and reported 35-month clinical survival rates of 97% irrespective of the presence of periodontitis.[30] Although these results support the use of immediately loaded IFCDs in periodontitis patients from a clinical research perspective, detailed reports on a standardised treatment approach remain scarce and treatment workflows seem to display high degrees of variability.[31,32] To the best of the author's knowledge, this case report is the first example of immediate restoration with IFCDs that applied a standardised CDSS.

Although the success rates of immediately loaded single and bridged implants in comparison with conventionally loaded implants remains controversial, immediately loaded full-arch restoration can today be regarded as a well-established treatment option.[13,33,34] Papaspyridakos et al., for example, recently concluded from a systematic review that implant survival, failure and complication rates of immediately loaded IFCDs in edentulous patients are comparable to those of conventionally loaded ones.[14] Furthermore, estimated one-year implant survival rates of IFCDs were found to be > 99% with all three loading protocols. The authors also recommended an insertion torque of >30 Ncm, which was adopted within the protocol presented in the current article. Another important aspect with regard to IFCD rehabilitation of patients with progressing bone atrophy is facial aesthetics, which is also considered part of the Caramês classification.[16] Araújo et al. have, for instance, demonstrated in a preclinical model that immediate placement alone might be insufficient to prevent post-extraction vertical loss of the buccal wall.[35] Likewise, other studies indicate that the extent of dimensional change during bone loss may be influenced by the thickness of the labial buccal bone.[35] Thicker buccal bone may help to reduce the extent of dimensional ridge alterations. In order to avoid loss of lip support and improve facial aesthetics, horizontal bone defects in the anterior buccal maxilla might therefore significantly benefit from horizontal

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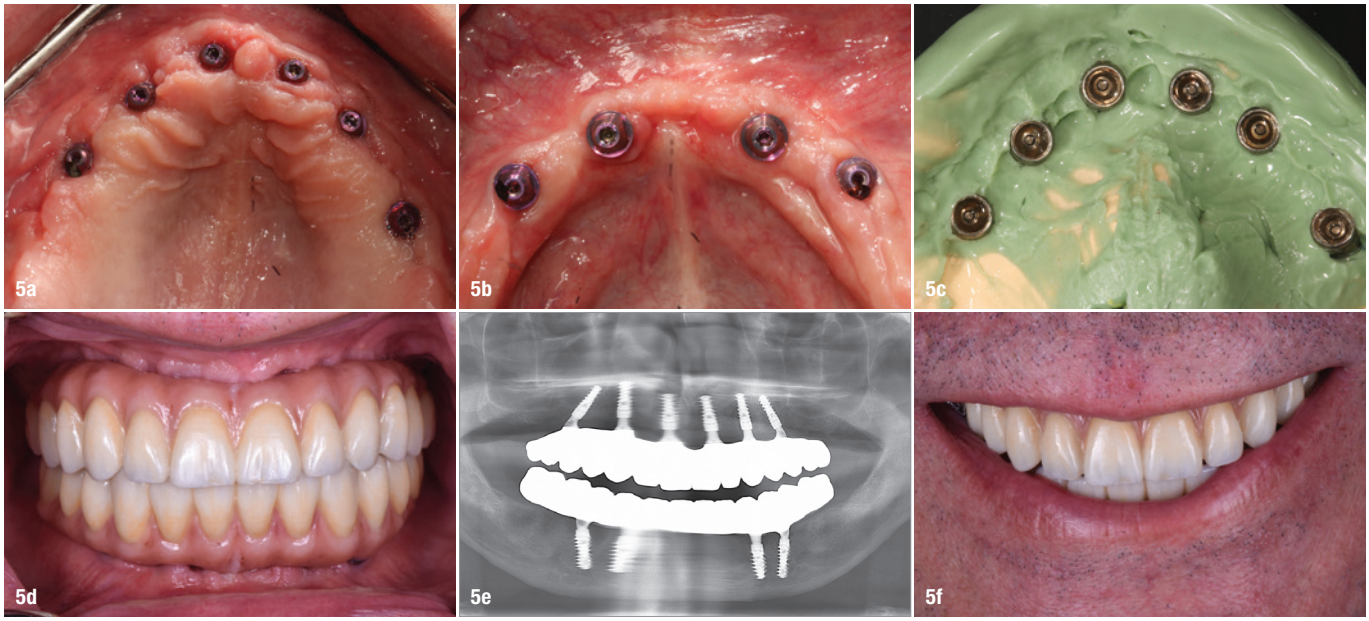

Figs. 5a–f: Occlusal view of healed maxillary and mandibular ridges six months post-op **(a & b)**. Occlusal view of the gingival impression with impression posts **(c)**. Definitive prostheses after installation **(d)**. Post-op panoramic radiograph six months after definitive restoration **(e)**. Frontal view of facial aesthetics after definitive restoration **(f)**.

contour augmentation.[36] Insufficient crestal bone height however might be compensated for by adapting the maxillary cervical edge of the transition line between the prosthetic gingiva and teeth of the IFCDs. These aspects were specifically considered in the case described.

For the definitive restoration, screw-retained zirconia prostheses were chosen to replace the metal framework-supported acrylic provisional restorations. Ceramic prostheses have the advantage of fabrication via a CAD/CAM workflow. Recent consensus reports indicate comparable survival and biological complication rates to those of metal–ceramic prostheses and a lower risk of complications in the aesthetic area.[33] Specifically, in the case described, fixed monolithic zirconia prostheses veneered with porcelain only in non-functional areas were chosen. This recently introduced type of prosthesis has been researched by the author of this article and colleagues with regard to the risk of prosthetic complications as part of IFCDs. This new type of restoration specifically showed a lower incidence of complications, for example ceramic chipping, when compared with conventional full-arch ceramic-veneered zirconia prostheses.[20,37] In summary, this case report has described the bimaxillary full-arch restoration of a partially edentulous periodontitis patient based on a CDSS that may help to standardise the rehabilitation plan based on the local alveolar osseous anatomy and level of atrophy. The case report has illustrated and discussed the most essential clinical and anatomical aspects that might be relevant for the design of the treatment plan and individual clinical workflow specifically with regard to the treatment of patients with active periodontitis. In conclusion, the application of this CDSS may help to standardise the workflow and rehabilitation plan of immediate IFCD rehabilitation in daily clinical practice and future clinical research.

Author details | Video | Literature

about the author

Prof. João Caramês is professor of oral surgery and director of the Faculty of Dental Medicine of the University of Lisbon in Portugal. He is coordinator of the implantology research group at the faculty's oral and biomedical sciences research unit. Prof. Caramês is director and founder of the Implantology Institute in Lisbon. This private practice is focused on oral surgery and implant dentistry.

contact

Prof. João Caramês
Lisbon, Portugal
+351 91 9727353
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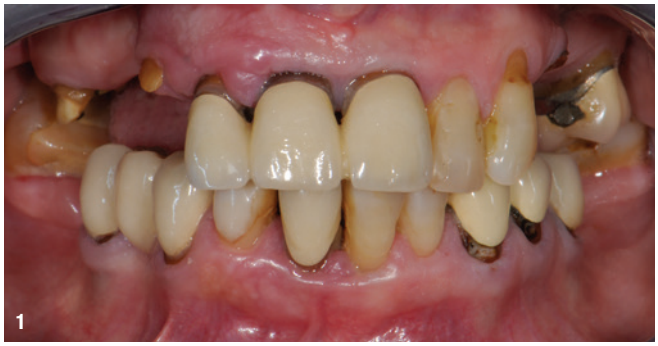


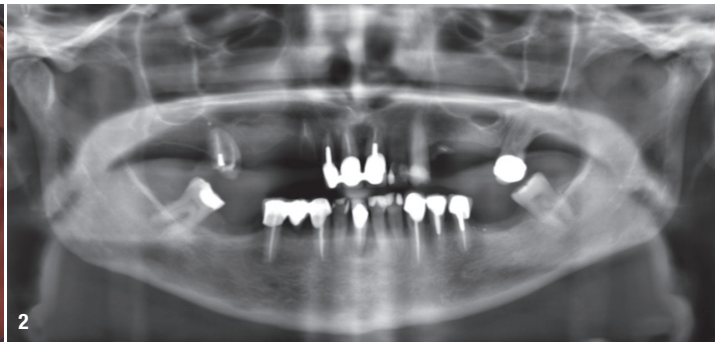
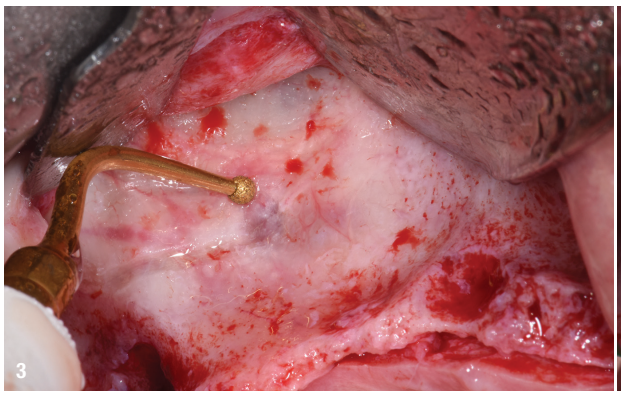


Fig. 1: Intra-oral image. **Fig. 2:** Pre-operative radiograph.

Introduction

Placement of dental implants is an increasingly common approach to the replacement of missing teeth.[1] Implant-supported prostheses can be used as an alternative to traditional bridgework or removable dentures in case of partially and completely edentulous patients. However, the posterior region of the maxilla is usually a challenge for surgeons owing to the bone resorption that occurs after tooth extraction.[2–3] Moreover, the maxilla mainly consists of spongy bone, which is one of the least dense in the oral cavity.[4] To compensate for atrophy and increase the bone volume available for the insertion of implants, various techniques have been developed.[5] Maxillary sinus elevation is a predictable and well-documented method to increase bone volume for maxillary implant placement.[6,7] This procedure may even increase bone quality by augmenting the sinus cavity with a bone grafting material that generates a denser bone. The standard maxillary sinus elevation methodology involves creation of an external window, careful lifting of the sinus membrane and packing of the sinus floor under the lifted membrane with a bone graft. Its predictability and safety have been demonstrated since 1980 by evaluating bone formation, noting low complication rates and high implant success rates[8,9] regardless of the residual crestal bone height.[10]

Instead, for minor and moderate horizontal ridge deficiency, guided bone regeneration (GBR) offers the possibility of restoring the bone architecture through the application



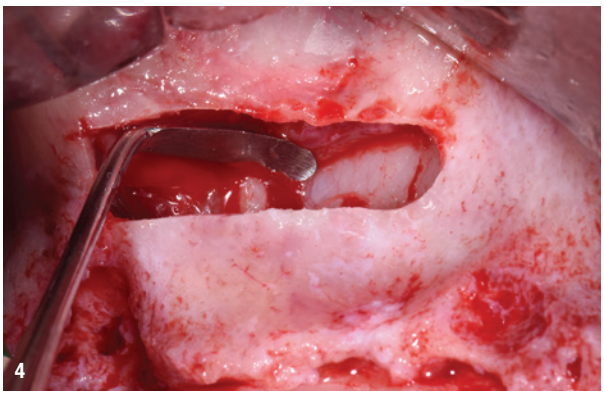
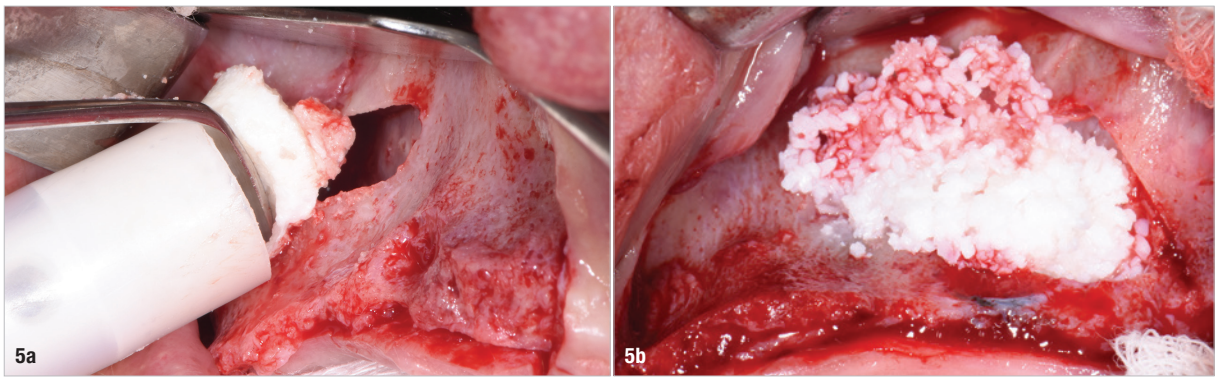


Fig. 3: Antrostomy design by means of piezo-surgery. **Fig. 4:** Elevation of the Schneiderian membrane.



Figs. 5a & b: Placement of collagenated sticky bone substitute inside the antrostomy on the right side **(a)** and prehydrated heterologous bone substitute inside the antrostomy on the left side **(b)**.

of bone grafting materials in conjunction with barrier membranes to stabilise and protect the grafting materials placed.[11] Recently, GBR using resorbable membranes has been shown to correct or augment knife edge ridges.[12–14] The PASS principle (primary wound closure, angiogenesis, space maintenance and stability of the blood clot) remains a cornerstone of successful GBR.[15] A combination of ridge and sinus augmentation for partially edentulous patients has been documented to produce medium- to long-term implant survival.[16–18] In the arena of GBR as well as sinus augmentation, a wide variety of materials have been investigated. So far, no consensus has been reached with regard to the clinical superiority of one material over another. The purpose of the current article is to illustrate how the combination of different techniques, the correct use of bone substitutes and soft-tissue management can restore a maxillary arch and deliver a fixed implant-supported prosthesis, as well as to evaluate the volumetric change of the bone substitute used over time.

Case 1: Maxillary sinus surgery and delayed implant placement

A 50-year-old female patient presented at Lake Como Institute in Italy needing complete maxillary rehabilitation. Careful clinical examination and radiographic (conventional and CBCT scan) assessment were carried out, and all the teeth were deemed hopeless (Figs. 1 & 2). The patient requested rehabilitation of the maxilla with a fixed prosthetic solution. The treatment plan included four surgical steps: the extraction of all of the remaining teeth, bilateral maxillary sinus elevation with initial horizontal augmentation, implant placement with a second horizontal augmentation and the uncovering phase for the management of the soft tissue. After the extractions, a complete denture was delivered to the patient. It was decided to wait for four months before moving on to the next surgery in order to allow the post-extraction sockets to heal. The prosthesis was relined twice during this time to obtain correct adaptation.

Before performing the bilateral maxillary sinus elevation, a clinical and radiographic evaluation were carried out to determine the difficulty of the surgery.[19] After local anaesthesia (4% articaine with 1:100,000 adrenaline) of the maxillary edentulous areas, two crestal incisions displaced towards the palatal sides were performed. Divergent releasing incisions were made buccally in the canine and tuberosity sites, and two full-thickness flaps were elevated at the buccal sides to expose the lateral walls of the maxillary sinuses. Two lateral osseous windows were then cut using different inserts of a piezoelectric device (Fig. 3). Care was taken to avoid perforation of the sinus membrane throughout the procedure.[20] The membrane was elevated using special sinus curettes until the sufficient height for the implants had been achieved (Fig. 4). A collagen sponge was inserted into the tuberosity to keep the sinus membrane elevated, and micro-holes were made

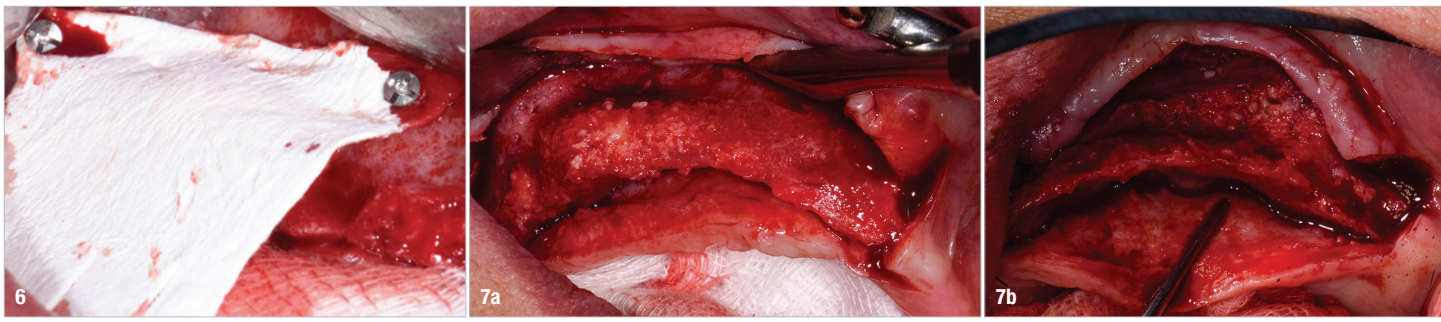
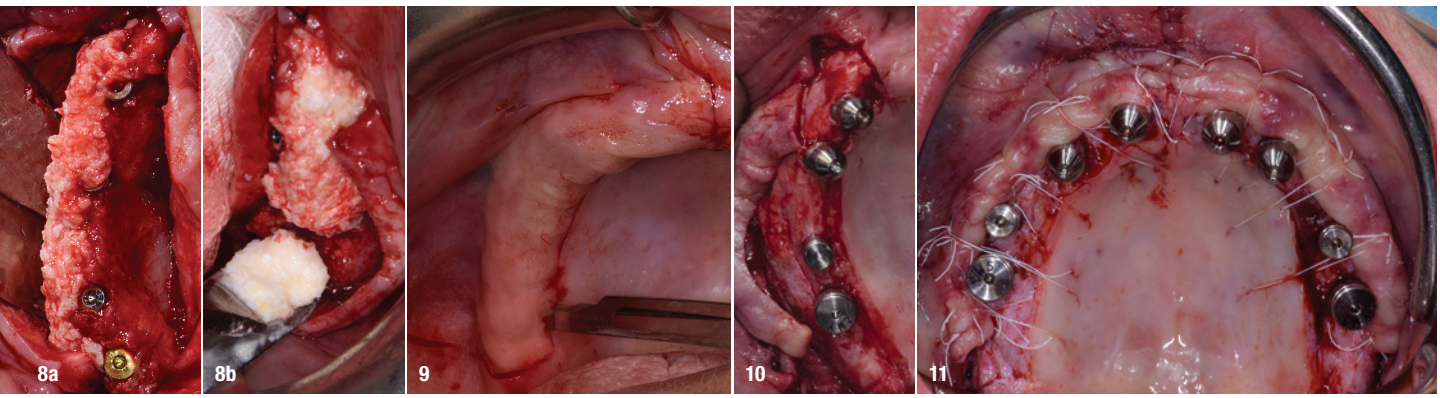


Fig. 6: Fixation of the collagen membrane with mini-screws. **Figs. 7a & b:** Result of the first horizontal augmentation of the right side **(a)** and the left side **(b)**.

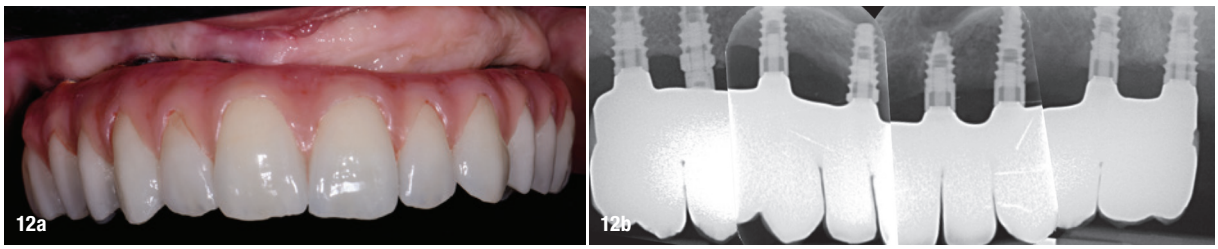


Figs. 8a & b: Second horizontal augmentation of the right side **(a)** and the left side **(b)** with the implants already placed. **Fig. 9:** Flap design of the uncovering phase. **Fig. 10:** Split thickness-flap during the uncovering phase with healing abutments placed. **Fig. 11:** Final sutures of the fourth surgical step.

to increase vascularisation and bone regeneration. A collagenated heterologous sticky bone substitute in a collagen matrix (OsteoBiol GTO, Tecnoss) was then inserted directly into the antrostomy of the right sinus (Fig. 5a) and a pre-hydrated heterologous bone substitute (OsteoBiol mp3, Tecnoss) into the left sinus (Fig. 5b), and both of them were compacted. A collagen membrane (OsteoBiol Evolution, Tecnoss) was fixed through micro-screws above the antrostomies (Fig. 6), a first layer of bone substitute (GTO) was placed on the buccal side of the right sinus because of the horizontal atrophy and the membranes were folded beneath the palatal wall. Before suturing, a layer of PRF membranes was arranged to protect and enhance the healing of the sites. Both of the sides were sutured, for healing by primary intention. Owing to the limited bone height under the sinus floor, implant placement was delayed for graft consolidation until three months later. A CBCT scan was taken to examine the degree of augmentation, and two other measurements on each side were taken in order to have a starting point for evaluating the future volumetric changes of the biomaterials.

The patient returned after three months for CBCT examination to decide whether the healing was optimal for the implant surgery. Unfortunately, owing to medical problems, she delayed the surgery. When the patient was able to come back, after three additional months, another CBCT scan was taken before implant surgery to assess the further volumetric change of the biomaterials and to plan appropriate implant surgery. A full-thickness flap was elevated to evaluate the results of the previous bone augmentation on both the right (Fig. 7a) and the left sides (Fig. 7b). Eight implants then were placed, and another layer of biomaterial (GTO) was placed on the buccal site of both sides. Thanks to the properties of this collagenated sticky biomaterial, there was no need to hydrate it because it adhered where it was placed, removing the risk of losing granules during the procedure (Figs. 8a & b). The biomaterial was then covered with a membrane (OsteoBiol Evolution) and both sides were sutured.

Four months later, the patient was scheduled for the final surgical step: the uncovering phase. Before proceeding with the final step, a last CBCT scan was taken to evaluate the positions of the implants and how the height of the new sinus floor had adapted to the implants placed. The uncovering phase was scheduled after implant osseointegration in order to recreate keratinised tissue on the buccal side and to re-establish the correct fornix depth. This time, a partial-thickness flap was elevated, starting from the palatal side (Fig. 9), to expose the cover screws of the implants while leaving the connective tissue around the implants. The cover screws were removed and replaced with healing abutments of the desired heights (Fig. 10). The flap was then sutured, leaving all the keratinised tissue on the vestibular side while allowing the palatal side to heal by secondary intention (Fig. 11). After complete healing of the tissue, after about eight weeks, an impression was taken and the provisional prosthesis was fabricated and delivered. After complete maturation of the tissue, after about four months, another impression was taken and a definitive prosthesis was fabricated and delivered (Figs. 12a & b).



Figs. 12a & b: Intra-oral image **(a)** and periapical radiograph **(b)** of the definitive prosthesis.

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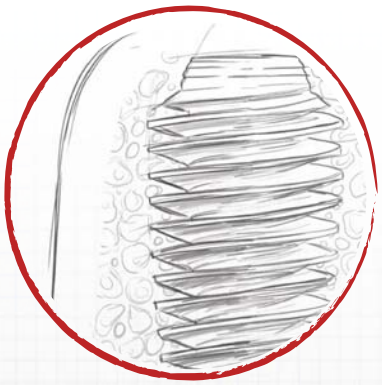

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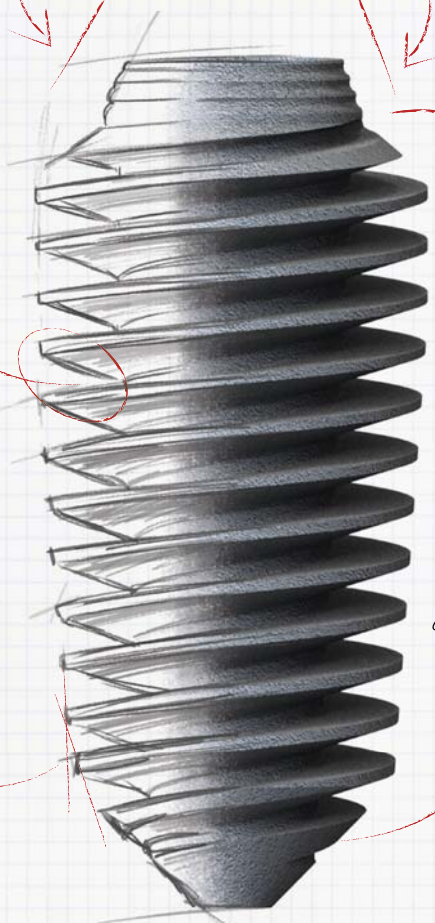

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OsteoBiol GTO	First measurement	Second measurement
Post-op	22.20 mm	21.61 mm
3 months of healing	15.61 mm	15.40 mm
6 months of healing	12.88 mm	13.20 mm
At uncovering (after 10 months)	9.63 mm	9.60 mm
% shrinkage after 3 months	6.59 mm (22.20–15.61 mm; 29.7%)	6.21 mm (21.61–15.40 mm; 29.7%)
% shrinkage after 6 months	9.32 mm (22.20–12.88 mm; 42.0%)	8.41 mm (21.61–13.20 mm; 38.9%)
% shrinkage after 10 months	12.57 mm (22.20–9.63 mm; 56.6%)	12.10 mm (21.61–9.60 mm; 55.6%)

Table 1: OsteoBiol GTO: Graft volume evaluation over time.

OsteoBiol mp3	First measurement	Second measurement
Post-op	21.80 mm	25.20 mm
3 months of healing	17.60 mm	17.82 mm
6 months of healing	14.60 mm	14.82 mm
At uncovering (after 10 months)	10.81 mm	10.83 mm
% shrinkage after 3 months	4.20 mm (21.80–17.60 mm; 19.30%)	7.38 mm (25.20–17.82 mm; 29.30%)
% shrinkage after 6 months	7.20 mm (21.80–14.60 mm; 33.00%)	10.38 mm (25.20–14.82 mm; 41.20%)
% shrinkage after 10 months	10.99 mm (21.80–10.81 mm; 50.41%)	14.37 mm (25.20–10.83 mm; 57.02%)

Table 2: OsteoBiol mp3: Graft volume evaluation over time.

Clinical outcome

Before the final surgical step (the uncovering phase), a CBCT scan showed the exact positions of the implants and the height of the new sinus floor. The bone height augmentations were considered successful for implant placement under good conditions. After a healing period of four months, the CBCT scan showed that both sides had healed well. Recovery was uneventful, and there was no complaint of pain and no signs of infection. The same positive results could be deduced from the radiographic controls taken over time. All the measurements were collected in two charts, depending on the biomaterial used, to evaluate how the bone substitute used changed volume over time. The heights of the augmented sinuses decreased at a similar pace. Between the postoperative CBCT scan and the healing at three and six months, the right sinus, in which GTO was used, decreased from 22.20 mm to 15.61 mm (29.7% volumetric change) to 12.88 mm (42.0% volumetric change) and from 21.61 mm to 15.40 mm (29.7% volumetric change) to 13.20 mm (38.9% volumetric change). Similarly, the left sinus, where mp3 was used, decreased from 21.80 mm to 17.60 mm (19.3% volumetric change) to 14.60 mm (33.0% volumetric change) and from 25.20 mm to 17.82 mm (29.3% volumetric change) to 14.82 mm (41.2% volumetric change). Therefore, the augmented sites were of sufficient volume for implant placement. It is worth noting that the bone remodelling did not stop after the implants had been placed. In fact, when the last CBCT scan was taken at ten months of healing (before the uncovering phase), further resorption, to the tips of the implants, corresponding to around 55% resorption, was found (Tables 1 & 2). Nevertheless, it can be appreciated how both of the biomaterials allowed reconstruction of the crest height and how GTO allowed restoration of even the diameter of the crest. What is more, the morphology of these biomaterials resembled that of the natural bone. In fact, it was difficult to notice a difference between the bone grafts placed and the bone of the patient. However, it must be pointed out that GTO had a slightly greater resorption compared with mp3, probably due to its greater collagen gel component.

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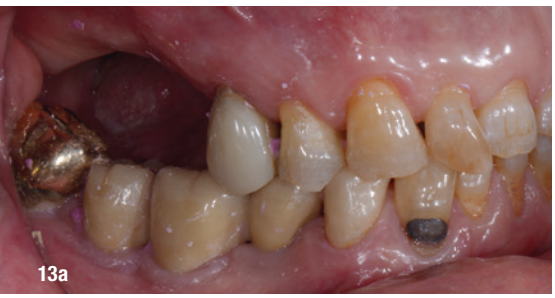
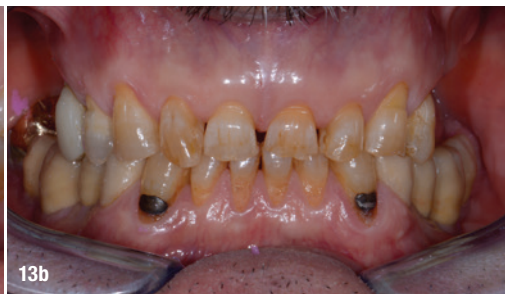
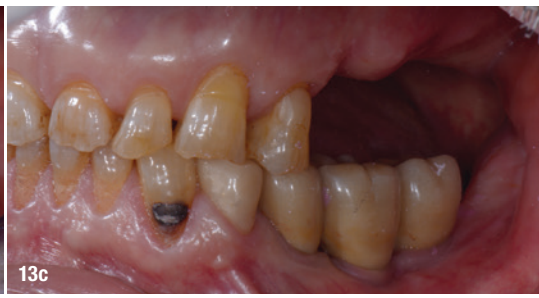


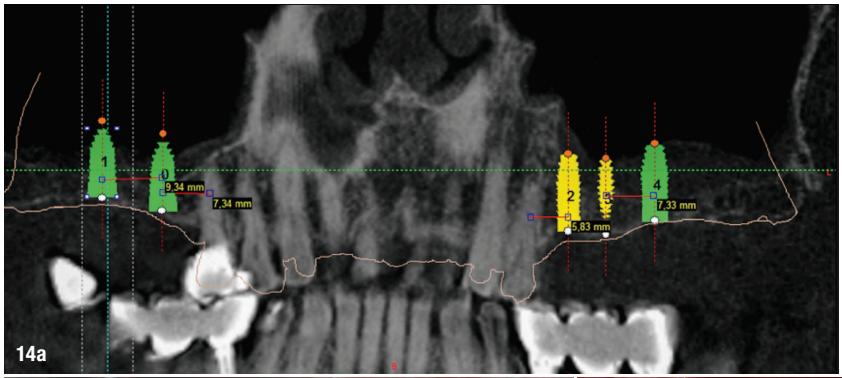


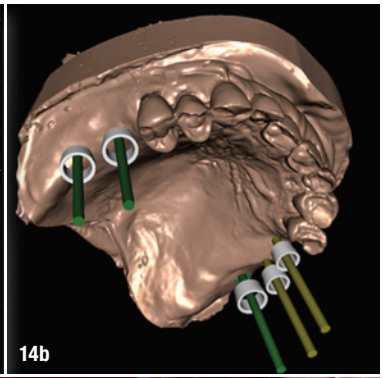


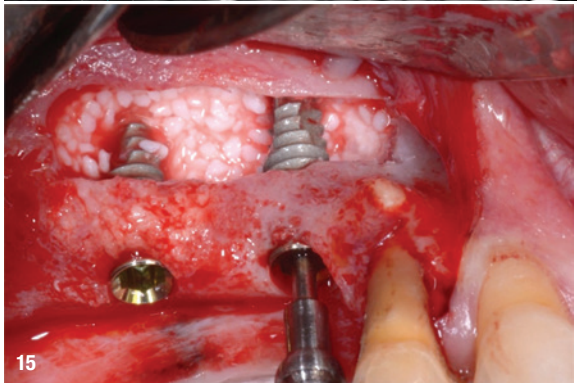
Figs. 13a–c: Pre-operative intra-oral images.

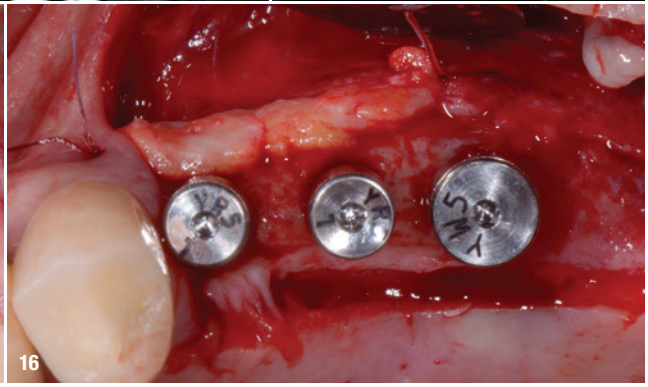
Case 2: Maxillary sinus surgery and simultaneous implant placement

This patient also presented at Lake Como Institute, having been referred by a colleague, requesting fixed rehabilitation of the edentulous areas of his posterior maxilla. A careful clinical examination was conducted (Figs. 13a—c) and a CBCT scan taken to plan proper implant surgery (Figs. 14a & b). The patient requested as few surgeries as possible and completion of the treatment in the shortest possible time. Bilateral sinus elevation with bilateral horizontal augmentation and simultaneous implant placement was the chosen treatment plan. The approach was similar to that of the first case: two flaps with two vertical incisions were elevated to expose the lateral sinus walls and then two antrostomies were opened with the help of piezo-surgery inserts. The sinus membranes were elevated, paying attention not to perforate them, and two collagen sponges were inserted into the posterior recesses to keep the membranes elevated so that the osteotomies could be made. The biomaterial (GTO) was inserted through the antrostomies and compacted. The implants were then placed, since this time there was greater residual bone height (Fig. 15), and a layer of biomaterial was used to compensate for the horizontal atrophies. To stabilise the biomaterial, a double layer of collagen membranes (Evolution) was used, a final layer of L-PRF (leukocyte- and platelet-rich fibrin) membrane was placed to enhance soft-tissue healing and the flaps were sutured. A CBCT scan was taken to evaluate the degree of vertical and horizontal augmentation, and the patient was scheduled for the last surgery four months later. During the uncovering phase, two split-thickness flaps were elevated, exposing the underlying implants, and a connective graft was collected by thinning the palatal flap. The cover screws of the implants were replaced with healing abutments, and the connective graft was placed on the vestibular side to further expand the crest diameter (Fig. 16). A final layer of L-PRF was put around









Figs. 14a & b: Digital implant planning: 2D **(a)** and 3D **(b)** view. **Fig. 15:** Insertion of the implants. **Fig. 16:** Connective graft sutured to the periosteum with healing abutments positioned.

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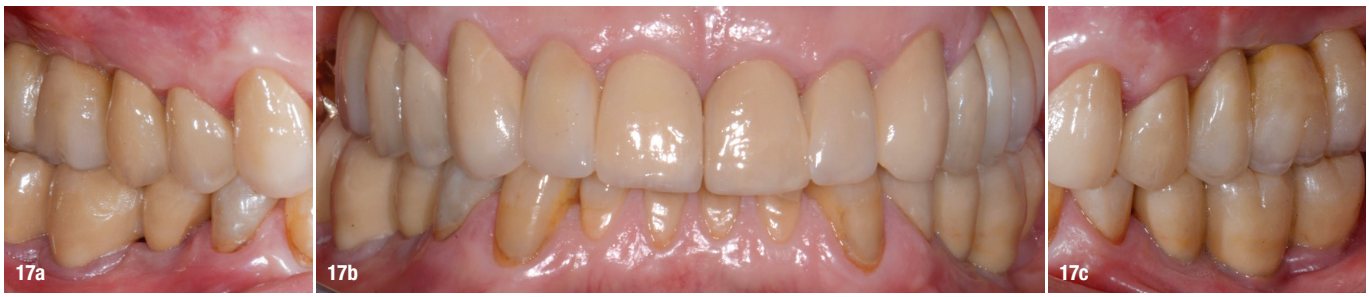

Figs. 17a–c: Clinical and radiological follow-up at five years. *(Images © P. Zappavigna DDS)*

the healing abutments and the flaps were sutured. The patient then returned to his dentist for finalisation of his treatment.

Clinical outcome

The implants and the soft tissue healed uneventfully, and the patient underwent just two surgeries. The implants were still stable after five years of loading (Figs. 17a–c).

Discussion

The two cases demonstrate how there might be perfect timing for placing implants after the first vertical augmentation. The idea is not to let the bone substitutes remodel too much, in order to allow easier implant placement and the use of longer implants to obtain a correct implant–prosthesis proportion. Probably, as can be seen from Tables 1 and 2, four months would be the best time to proceed with the implant placement, because the biomaterials act like natural bone: they will continue to remodel over time if not stimulated by occlusal forces. Instead, when the implants are placed simultaneously with sinus elevation, the implants create a tenting effect that serves as support to the Schneiderian membrane, arresting bone physiological resorption. That is why, when possible, often the best treatment may be placing the implants simultaneous to sinus augmentation.

Edentulous maxillary segments have several anatomical and physiological limitations, such as deficiency of spongy maxillary alveolar bone and increased pneumatisation of the maxillary sinuses. These factors render rehabilitation of the region challenging. In these two cases, maxillary sinus elevation procedures through lateral access were successfully performed using GTO or mp3. Horizontal augmentation was successfully performed using only GTO. These materials were able to increase vertical bone height and horizontal bone diameter and allowed for the placement of the requested implants. A follow-up panoramic radiograph was obtained at the delivery of the prosthesis and demonstrated what appeared to be new bone formation in the maxillary areas and the areas at the tips of the implants. It is important to emphasise the benefits of this approach for maxillary reconstruction via GBR and sinus augmentation over other treatments (e.g. autogenous block grafting): no complications at the donor site, no need for hospitalisation and less postoperative discomfort. The current results are in agreement with those of previous studies,[21,22] as well as systematic reviews,[23,24] illustrating that implant survival rate and peri-implant bone level in the grafted bone are comparable to those of implants placed in native bone. A similar outcome has been observed for implants placed in augmented sinuses.[7]

Conclusion

Complete reconstruction of atrophied maxillae can be successfully achieved by means of GBR for horizontal and/or vertical bone gain, including bilateral sinus augmentation when GTO and mp3 are used. In fact, the morphology of these grafted sites resembles the anatomy of a natural sinus, the bone remodelling at the level of the tips of the implants, and has the same radiographic appearance as the natural lost bone of the patient. Moreover, it appears that the best time to place the implants after sinus augmentation, in a delayed approach, might be around four months, to ensure as little graft resorption as possible. Peri-implant bone level in the completely reconstructed maxilla showed minimal changes. Furthermore, proper training in hard- and soft-tissue management is imperative for achieving successful outcomes and avoiding potential complications.

about the authors


Dr Livio Lo Faro


Dr Francesco Giachi Carù


Prof. Tiziano Testori

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Prof. Tiziano Testori
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Dental lasers against peri-implantitis

Dr Bradley Labrecque, Canada

Background

The replacement of lost teeth with dental implants represents a modern approach in restorative dentistry. Among various complications, including bleeding from the implant site, infection, and pain are early signs of problems. Severe complications may result in peri-implant mucositis and peri-implantitis, which are infectious bacterial diseases with inflammatory processes that are similar to gingivitis and periodontitis.[1–3] Peri-implant mucositis is defined as a reversible inflammatory reaction in the soft tissue surrounding the implant, and peri-implantitis is associated with pathological pocket formation and loss of supporting bone around the implant, resulting in implant failure.[1,2,4]

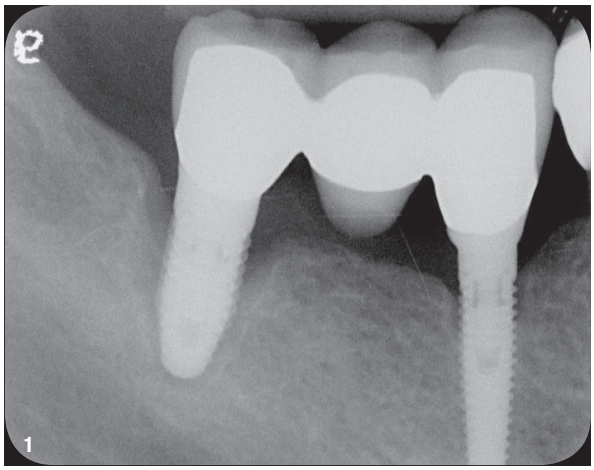

Fig. 1: Pre-op radiograph.

Bacterial biofilm plays a major role in peri-implant disease and implant failure.[5–8] Modern dental implants have a structure with a rough surface that facilitates microbial colonisation and enhances the formation of biofilm, which is not easy to remove.[9] Several methods have been proposed for the prevention and treatment of peri-implant disease (e.g. the use of chemical agents and mechanical debridement with curettes, ultrasonic devices, air abrasion and laser therapy), but no approved therapeutic protocol has been established.[10,11] Owing to the major role of microorganisms in the formation of peri-implant disease, the primary goal of any treatment is to remove the biofilm from the implant surface. The results of using different techniques for biofilm removal suggest that none of the currently used methods is sufficiently effective or superior to the others.[12–14] The limited effectiveness observed of these methods is most likely due to directly inaccessible sites during the therapy. The inaccessible implant micrograph facilitates microbial colonisation and accelerates biofilm formation.[15] In recent years, lasers have shown a promising effect in the treatment of peri-implantitis, producing many positive treatment outcomes.

Medical, dental and social anamnesis

The patient was a 64-year-old male in good health with no significant medical issues and took no medication other than vitamin supplements. He was a smoker, smoking approximately three to four cigarettes per day. He maintained good oral health, but had a history of oral neglect and was on a three-month hygiene recall. He had been wearing a complete maxillary denture for ten years. He was missing teeth #47, 46, 45, 36 and 37. He had undergone implant treatment on the mandibular arch five years previously. The temporomandibular joints showed no significant findings. He had a Class I occlusion.

Diagnosis

After the implant placement, the patient had started to smoke, which he had been recommended to stop. It was noticed there was a slight alveolar breakdown of the areas around implants #47 and 45. Regular hygiene visits and the cessation of the smoking were tried to arrest the breakdown of the alveolar bone. Radiographic examination determined that these measures were not achieving the desired results, and more extensive periodontal treatment was required (Fig. 1). It was determined that deep cleaning of the infected area was needed to remove the pathogens, in a minimally invasive manner for patient comfort. After the patient stopped smoking, which is known to affect the integrity of implants, further treatment was considered.

Treatment plan

A dual-wavelength laser procedure using Er:YAG and Nd:YAG (Fotona) was selected, considering the benefits of the treatment over traditional periodontal flap surgery. The erbium laser would be used to clean the surface of the implant photo-thermally, creating no heat on the titanium surface. The laser energy would be absorbed by the water of the surrounding tissue, vaporising the infected tissue and removing it as well. This laser energy would be best for cleaning the implant surface, which was fluted.

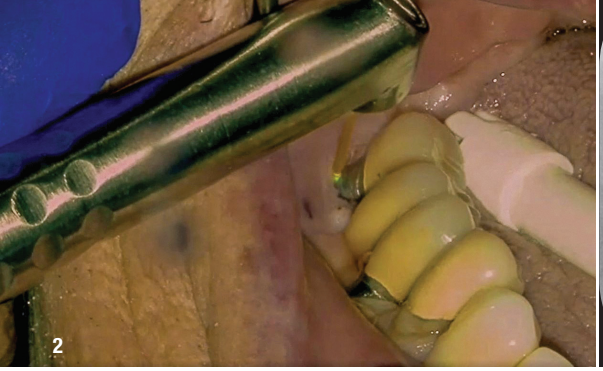
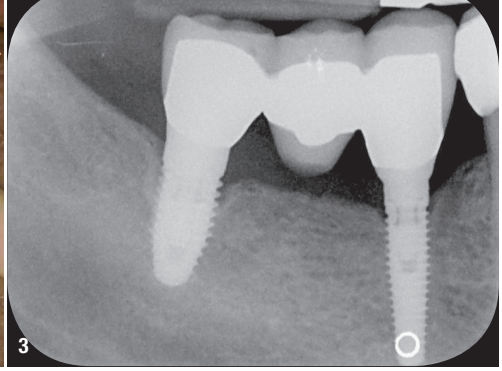


Fig. 2: Degranulation using the Er:YAG laser. **Fig. 3:** Radiograph taken at the nine-month follow-up, showing bone healing. **Fig. 4:** Clinical situation at the nine-month follow-up.

Treatment and laser parameters

Anaesthesia was administered using articaine with 1:100,000 adrenaline (two carpules). For initial access, the Varian 600/14 (600 µ) tip (Fotona) was used in the Er:YAG HC14-N handpiece (Fotona) at 160 mJ and 20 Hz in MSP mode with a 5/4 water–air spray and a sweeping motion to remove the granulation tissue and calculus from the bone to the base of the pocket as well as to decorticate the alveolar bone at the pocket base with firm pressure of the tip to stimulate bleeding for bone regeneration (Fig. 2). Furthermore, the outer epithelium was de-epithelialised by approximately 5 mm to prevent early ingrowth into the sulcus, which can prevent healing of the sulcus. We know that fibroblasts and osteoblasts can only regenerate and reattach to the implant surface at 0.5 mm in ten days. The invasion of the outer epithelium migrates at 1–2 mm in ten days. No conventional instrument can access this surface adequately. Tip selection is important for the implant surface and the Er:YAG XPulse 600/14 tip (now named RadialSWEEPS; Fotona) was used for its photoacoustic properties. Implant surface cleaning was performed at 60 mJ and 10 Hz in MSP mode with a 5/4 water–air spray. Water was maintained at this higher setting throughout the procedure to ensure that no heat was generated. The movement of the tip in the pocket provided a final sulcular debridement of the inner epithelial wall and the implant surface.

Disinfection of the implant at the surgical site is best done with the Nd:YAG. For this purpose, the R21-C3 handpiece (Fotona) was used at 2 W and 20 Hz and in MSP mode. Thereafter, the setting was changed to 3.5 W, 20 Hz and VLP mode to initiate fibrin clot formation, which in turn would initiate bone formation in the surgical site. Biomodulation was done with the Nd:YAG laser to reduce inflammation for more efficient healing of the area. Special care should be taken not to overheat the area. The R30 handpiece (Fotona) was used with a 8 mm spot size, at 25 ms and 2 W for 1 minute. The patient was then scheduled for a follow-up biomodulation treatment in one week. After that, the patient booked a follow-up and biomodulation treatment again after three weeks. The total laser procedure time was 15 minutes. Initially a large amount of infected tissue was removed during the process. The procedure in the area was performed until the infected tissue had been eliminated. PeriAcryl (GluStitch) was placed to stabilise the tissue.

Results and discussion

There was no swelling after the treatment and the patient took no pain medication. Bleeding was controlled by the clot formation and mild pressure. One week after the procedure, the tissue looked healthy and had minimal redness. The patient underwent a periodontal maintenance protocol at a three-month interval. No probing took place in the first six months. After nine months, radiographic examination showed osseous regeneration (Fig. 3) and no bleeding on probing. The pocket depth was 3 mm, the tissue was firm and pink, and there was 4 mm of attached gingiva around the implant (Fig. 4).

Conclusion

The use of the Er:YAG and the Nd:YAG laser is a predictable and safe procedure for treating peri-implantitis in its early stages without having to elevate a flap in the area. The two wavelengths work in conjunction with one another to achieve osseous regeneration in a diseased pocket. The Nd:YAG is the optimal wavelength for disinfection and osteoblast regrowth stimulation. The Er:YAG absorption results in a mechanical disruption of the diseased tissue and removes the granulation tissue and biofilm from the surface of the implant, optimising osseous cells to attach to the implant surface. The use of laser energy has been shown to be the most effective way to clean the implant surface over mechanical methods. This can be done with minimal trauma to the patient, both physically and financially. This should be the standard of care. As Albert Einstein said, “We cannot solve our problems with the same thinking we used when we created them.” This truly is the case with peri-implantitis.

about the author

Dr Brad Labrecque, DMD, MSc, is a general dentist whose focus is on incorporating laser technology in the modern dental practice. He is passionate about training dental practitioners in the use of dental lasers in all clinical procedures. Dr Labrecque has completed hundreds of hours of continuing education, and his practical experience makes him an international authority on laser dentistry.

contact

Dr Bradley Labrecque
Cedar Dental Centre
Kamloops BC, Canada
+1 778 7658049
www.cedardental.ca

Author details

Literature

Successful rehabilitation of an anterior tooth

Dr Dr Branislav Fatori & Dr Inge Schmitz, Germany

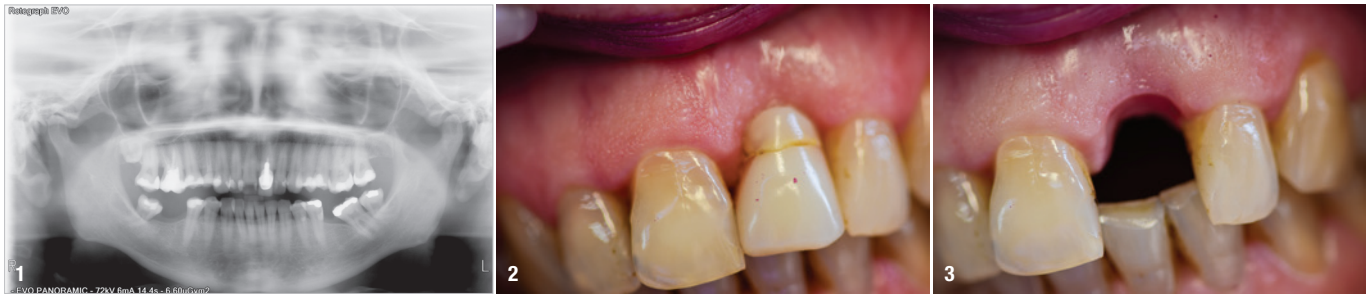

Fig. 1: Radiograph of the initial clinical situation. **Fig. 2:** View of the old crown. **Fig. 3:** Situation after crown removal.

Replacing a tooth in the anterior region with a dental implant is a demanding task. When it comes to aesthetics, it virtually always poses a challenge for the clinician, since his or her primary objective is to preserve the smile line as effectively as possible. Ideally, the transition from implant to crown should not be visible. If there is too little gingiva or if it is thin, there is a risk that the implant and abutment connection will show through the gingiva. To ensure that the colour of the crown does not differ from the colour of the adjacent teeth, close cooperation with a skilled dental technician is always required. If the transition between the implant (or tooth) and the gingiva is not visible when smiling, the problem of aesthetics can usually be solved well. However, if the smile line is relatively high, the gingiva and bone volume play a crucial role in the aesthetic treatment. In the following, a clinical case is presented in which the successful restoration of an anterior tooth in a patient with a high smile line is described. The patient had an old restoration which needed replacement after 15 years of wear.

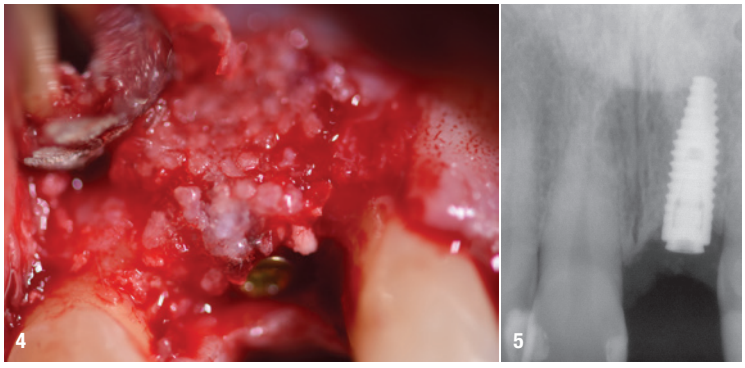

Fig. 4: Bone augmentation. **Fig. 5:** Radiographic view of the freshly inserted implant.

Materials and method

The 51-year-old female patient was a non-smoker. Her medical history did not reveal any peculiarities. The periodontal examination did not reveal any pathologies. Her dentition was largely free from caries. However, tooth #21 was deemed unsalvageable, owing to apical osteitis (Fig. 1). It was decided to replace the tooth (Fig. 2) with a 3.75 mm × 12.0 mm DENTAL RATIO implant (Meisinger).

Premedication and implant insertion

As for premedication, microbiological examination before surgery and optional therapy with antibiotics have been proved to be successful. To this end, the authors usually prescribe amoxicillin–clavulanic acid (Augmentin 875 mg/125 mg, GlaxoSmithKline), to be administered three times a day. Before surgery, plaque was removed by means of professional dental cleaning. In addition, HELBO therapy was carried out. The principle of this approach is based on the binding of photoactivated substances to the bacterial cell wall and their activation by light of a defined wavelength. Local anaesthesia was administered with Ultracain D-S forte (Sanofi-Aventis Deutschland). For the incision, a 14C scalpel (Aesculap) was employed while optimally preserving the gingival mucosa (Fig. 3). The preparation of the osteotomy commenced with a pilot drill (1.80 mm), which was then continued with a drill (2.28 mm) and a final drill (3.20 mm). The machined implant was inserted to a torque of 40 Ncm. The thorough evaluation of the peri-implant soft tissue and the bony tissue at bottom of the osteotomy was carried out by means of standardised methods. The gingiva was evaluated according to the papillary bleeding index by Saxer and Mühlemann.[1] Also, an evaluation by means of the sulcus bleeding index was done.

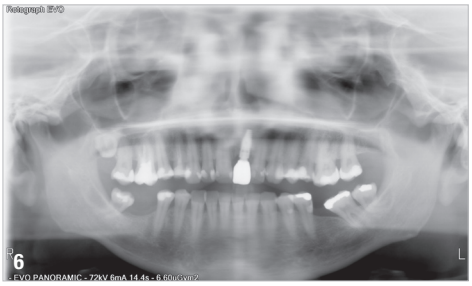

Fig. 6: Final radiograph. **Fig. 7:** View of the definitive restoration shows a satisfactory aesthetic result.

Augmentation

If there is insufficient bone volume for successful rehabilitation with dental implants, bone augmentation with autologous bone or bone grafts of other origin is required. In this context, the use of autologous bone is still considered the gold standard. In addition to their osteoregenerative effect, bone grafts must have the following properties: they have to be sterile; they have to be biocompatible; they should provide suitable biomechanics in that they need to withstand mechanical forces; they should be resorbable (in order to maintain the contour of the alveolar ridge or support the soft tissue, a slowly resorbed or non-resorbable bone graft may be a suitable choice); ideally, they should be osteoconductive; and they should be bioactive, since a solid connection between healthy vital bone and bone grafts is required for successful bony integration of the material. In the present case, NanoBone (Artoss) was used for augmentation (Figs. 4 & 5). Its structure leads to quick bone formation. Once the granulated substance is mixed with blood, it can be easily applied with a spatula or augmentation spoon.

Postoperative care

Acute peri-implant complaints are characterised by the following symptoms: pain, swelling, pus extrusion, bleeding on probing and implant mobility, loss of peri-implant hard tissue and increased probing depth. Postoperative follow-up appointments are conducted according to the criteria of Albrektsson et al. and Buser et al.[2,3] In the present care, treatment success was evaluated with a view to the following parameters: implant stability, a good macroscopic character of the implant surface, satisfactory results of the periodontal testing, little plaque occurrence and the absence of osteolysis indicators on the control radiograph (Fig. 6 & 7).

Discussion and conclusion

The loss of a tooth in the maxillary anterior area leads to impairments in terms of social interactions, in addition to functional ones. For the treating dentist, the paramount objective should therefore be to reconstruct the red–white aesthetics as perfectly as possible. In the case described, a satisfactory treatment outcome and high patient satisfaction could be achieved. In smokers, the baseline situation can be problematic, as implant loss rates are significantly higher in heavy smokers than in non-smokers. Studies have shown a higher implant loss rate of 5–9%. In smokers, the occurrence of marginal bone loss is also significantly higher than in non-smokers. Moreover, when employing the maxillary sinus for implants, implant loss occurs twice as often in smokers than in non-smokers.

Conflicts of interest: Dr Inge Schmitz declares that she has no conflicts of interest.

Acknowledgements: Dr Dr Branislav Fatori would like to thank Ulf-Christian Henschen from DENTAL RATIO in Langenfeld in Germany and Dr Walter Gericke from Artoss in Rostock in Germany for their support.

Dr Dr Branislav Fatori

Dr Inge Schmitz

Literature

about the authors

Dr Dr Branislav Fatori has more than four decades of experience in implantology. In addition to his German doctoral degree, he holds a second doctoral degree from the University of Belgrade in Serbia. He was trained at prominent clinics around the globe and has worked as a consultant for expert societies and implant manufacturers.

Dr Inge Schmitz has worked at the Institute of Pathology of the Ruhr University Bochum in Germany since 1990. Her main interests are implantology, stents, electron microscopy and osteology. She studied biology at the Ruhr University Bochum and completed her PhD at the then University of Essen in Germany in 1989.

contact

Dr Dr Branislav Fatori
Essen, Germany
+49 201 8218-8890
info@fatori.de
www.fatori.de

Dr Inge Schmitz
Georgius Agricola Stiftung Ruhr
Institut für Pathologie
Ruhr University Bochum
Bochum, Germany

On remaining vigilant

An interview with Julien Benhamou, TBR, France

Johannes Liebsch, Germany


Julien Benhamou

The Toulouse-based implant manufacturer TBR Dental has created quite a stir with its Z1 dental implant system with a titanium base and a zirconia collar. In this interview with *implants*, TBR Dental CEO Julien Benhamou discusses how the company has managed to weather the effects of the COVID-19 pandemic, in what productive ways it has utilised this most unusual time and what customers can expect from TBR Dental in the near future.

Despite the last year being filled with significant challenges due to the COVID-19 pandemic, many companies have taken the opportunity to reflect and develop new concepts. In what productive ways has TBR Dental used this unprecedented time?
The coronavirus crisis has undoubtedly made significant adaptations necessary on part of all TBR teams. All of our team members have shown strong responsiveness and a great team spirit that allowed us to maintain our business activities and to remain very close to our users. Already before the pandemic, our strategy was geared towards making our products and services available online. We therefore took advantage of this time to accelerate our current projects by promoting the creation of dematerialised media. Now, an entire range of products is available online: downloadable support material, product demonstrations and training videos, and a new online ordering tool through which to order implants, prosthetic components and instruments. TBR has also made the decision to support practitioners and labs even more actively by launching the #GetReadyWithTBR initiative. We selected and proposed a range of anti-coronavirus products dedicated to the protection and safety of dental practices around the world. This range is, of course, also available on our website.

With a view to growing vaccination rates and increasingly easing travel restrictions, further training is likely to become a reality again soon. How are you planning to introduce clinicians to working with your systems, such as Z1, in the near future?
Despite easing of COVID-19-related restrictions, we are well advised to remain collectively vigilant. This pandemic has taught us many lessons and has given us the opportunity to adapt and renew ourselves. In this light, I can proudly say that—even during the midst of the pandemic—we have never stopped offering content dedicated to informing and training clinicians through new channels, mainly online. Today, with the ongoing lifting

of restrictions, we are happy to offer in-person meetings, training sessions and study clubs with clinicians. However, we are looking to combine two approaches: on the one hand, we are organising online meetings, webinars, training and interviews, for instance, and on the other hand, we are carrying out in-person meetings and training and coaching sessions both in our dedicated centre as well as directly in the dental offices of our users. In this way, we hope to create a great deal of exchange with our users on our various TBR product lines and especially our Z1 implant.

Digitalisation is still one of the key trends in implant dentistry. What measures have you taken regarding digitising implantological workflows?
As a result of the development of our Z1, the tissue-level implant with a zirconia collar, TBR has acquired MSD [Multi Service Dentaire], which marks a new stage in its development. Founded in 2005, MSD supports dental laboratories in their digital transformation and in their quest for achieving technical excellence and the highest productivity. The company combines a comprehensive and innovative product portfolio with great knowledge of the daily needs of dental laboratories. Also, it has know-how that is second to none in the field. In 2020, TBR and MSD launched InDex Dental, a complete digital chairside and labside workflow involving the scanning phase, with intra-oral scanners and CBCT devices, and the milling phase, with machines adapted to the dentists' and labs' needs, including suitable CAD/CAM software, as well as associated materials and consumables. With the new InDex Dental product line, TBR offers customers the ability to use a complete, open and easy-to-use digital workflow.

Will you be participating in this year's trade shows and congresses? If so, what can customers look forward to?
This year, which I hope will be the year of recovery from the recent global crisis, we are looking forward to reconnecting with our users around the world. To allow our customers and friends to discover—or rediscover—our unique Z1 tissue-level implant with a zirconia collar and our InDex digital workflow, we are planning to organise at least 30 training sessions in France, Belgium, Spain and Italy and to participate in congresses like the French Dental Association's 2021 annual dental meeting in Paris in France.

What are your plans especially for the dental market in Germany? Do you still intend to establish a German branch to provide all of your products and systems to German clinicians?
We consider the German dental market to be quite forward-thinking, and we believe without a doubt that Germany-based users will fall in love with our unique and innovative product lines. Indeed, we are planning to create our own local infrastructure in Germany to support the development of our unique Z1 implant on the market there. Apart from that, we are currently evaluating acquisitions in Europe, in Germany especially, in order to accelerate our growth and consolidate our unique status in the dental implant segment on the European market.

contact

TBR Dental
Toulouse, France
+33 5 62167100
www.tbr.dental/en

The inventor of the Bicon system has passed away

Thomas Driskell, 1928—2021

Thomas David Driskell passed away on 15 July 2021. During his lifetime, he has helmed the invention of countless innovative medical devices and products, including the implant system established by the company Bicon, as well as the synthetic bone grafting material SynthoGraft.

Tom was an entrepreneur and inventor, who profoundly influenced many fields, including aviation, lighting, medicine, and dentistry. He had the primary role in the design and development of the FAA-standard VASI system (Visual Approach Slope Indicator), which is still used in airports around the world. He developed high-output lamps employing tungsten, tantalum carbide, halogen, and xenon, that were used to light many structures including the Empire State Building, Guggenheim Museum and the Panama Canal.

He designed and constructed the first heart-lung machine in Central Ohio, which was used to treat over 600 patients. He designed and produced the first free-standing dental implants (now known as Bicon implants), as well as a synthetic bone grafting material, SynthoGraft. Additionally, he published the first paper on zirconia, which is a widely used dental material. Tom received two coveted I-R 100 awards (known as the "Oscars of invention" or "the Nobel Prize for technology"), one for SynthoGraft in 1982 and one for the development of an infant respirator in 1973.

Tom was born 18 August 1928 in Columbus, Ohio, to Thomas Edgar Driskell and Eleanor Kauffman Driskell.

Tom was an avid sportsman, friend, and supportive mentor, who used his intellectual gifts to improve our world.

Tom shall be missed!

Source: Bicon Dental Implants

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(1) Nannmark U et al. Clinical Implant Dentistry and Related Research, 2008 Dec;10(4):264-70
(2) Giuliani A at al. Clinical Oral Investigation, 2017 2018 Jan;22(1):505-513
(3) Barone A et al. Journal of Clinical Periodontology, 2017 Feb;44(2):204-214
(4) Falacho RI at al. Molecules, 2021 Mar 2;26(5):1339
(5) Ramirez Fernandez MP at al. Clinical Oral Implant Research, 2013 May;24(5):523-30
(6) Barone A et al. Clinical Oral Implant Research, 2013 Nov;24(11):1231-7
(7) Thalmair T et al. Journal of Clinical Periodontology, 2013 Jul;40(7):721-7

REGENERATION SCIENCE

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Amann Girrbach

Digitisation pays off with AG.Live

Amann Girrbach is all about supporting laboratories in organising digital dental workflows. With the AG.Live digital platform, this project reaches a new dimension. AG.Live helps dental technicians to manage all digital activities locally and to connect with a global network of digital dental professionals. Patient case management is at the core of the platform, which replaces the previous C3 customer portal—this is where the patient case is created, managed and processed digitally. Patient cases can be shared with partner laboratories for further processing and in the foreseeable future also be exchanged between the dentist and the laboratory. Not only will laboratories and clinicians be networked, but also machines and materials—for example, to access material availability or to the operating modes of milling machines and many other relevant factors of a dental fabrication process. Thus, AG.Live will enable keeping track of all digital activities—from one place, anywhere and at any time. In doing so, it is Amann Girrbach's intention to create a network of optimised as well as new partnerships. Network participants will be able to work and collaborate more efficiently, to focus on their strengths and thus better position themselves in the market. In a further step, Amann Girrbach will implement access to the company's own “AG Academy” training portal with numerous training and further education opportunities.

Amann Girrbach AG, Austria
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Dentsply Sirona

Superior in marginal bone maintenance

For the first time, a meta-analysis looks at how three premium brand implant surfaces influence marginal bone maintenance. The story, co-authored by Dr Michael R. Norton and statistician Mikael Åström, came about for two reasons. First, no meta-analysis existed to compare the marginal bone loss due to different surface modifications among current premium brands. Second, articles by Dr Dirk Duddeck et al. suggest that premium implants are free of foreign materials. In contrast, cheaper implants may be riddled with impurities. Is this the case? And if so, was there any difference between premium brands too? The answer is essential as the surface affects osseointegration and marginal bone maintenance. In the case of cheaper clones, the research suggested that these may cause peri-implant infections and compromised function. Key takeaways of the meta-analysis include: OsseoSpeed (Astra Tech Implant System) has, on average, the least marginal bone loss in both 1-year (–0.29 mm) and 5-year (–0.35 mm) follow-ups; There is a statistically significant difference between OsseoSpeed and two other premium brand implant surfaces in both 1-year and 5-year follow-ups; OsseoSpeed offers more predictable outcomes with less variation around the mean and less spread. In conclusion, the authors state that OsseoSpeed demonstrates superior marginal bone levels—which is vital to achieving the best possible functional, biologic and aesthetic outcomes over the long term.

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augmentation material

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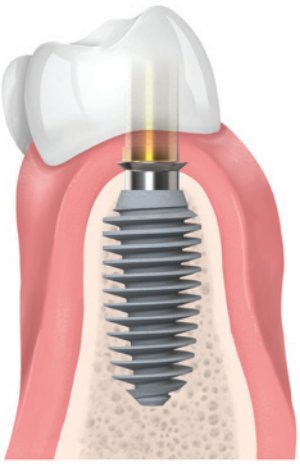

The successful K3Pro implant line from is now extended by an additional innov The Compress Implant. The desire of implantologists to provide patients with fixed provisionals immediately after implant surgery requires an implant with exceptionally high primary stability, especially in soft bone. For immediate implantations, however, it is often necessary that self-tapping thread flanks fix the implant securely to the alveolar wall and that there is generous free space for healing through blood coagulation The new Compress Implants fulfil both aspect without neglecting the classic virtues of K3Pro—th optimisation for subcrestal insertion for outstanding aesthetics and the anti-bacterial bone seal as well as the micromovement-free connection for sustained tissue preservation as part of the STC (Stable Tissue Concept). The compressive and progressive self-tapping thread for easy and precise insertion in soft bone has a plateau design and offers added primary stability for immediate loading. With immediate implantation, the conical, or tapered implant body offers sufficient space between the thread flanks to allow for blood coagulation.

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MIS

MGUIDE 16 mm drill kit for conical connection implant procedures

As part of the company's continuing effort to offer comprehensive solutions for guided surgery procedures in all clinical scenarios, MIS released the MGUIDE kit for 16 mm conical connection drills used in implant placement procedures. The kit has already been implemented in MSOFT, the MIS software used for guided procedure planning, and is offered through an automatic update. This offering extends the existing solution for this range of implant lengths that were not previously available. The kit includes all drills for a complete procedure, as well as the addition of a marking drill which is intended for extraction sites. Orit Kario, MIS Digital Solutions Product Manager, highlights the marking drill, explaining that "it was designed for this specific kit and enables drilling within sockets, providing an added value in immediate placement procedures within extraction sites. The drill's design allows to drill in through the socket wall. In addition, the same kit may be used for both standard and narrow sleeve drills.

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TBR Dental

Discover Z1®—The tissue-level implant with a zirconia collar

The Z1 tissue-level implant requires only one surgery, which is time-saving for the practitioner and more comfortable for the patient. In addition, its transgingival position allows the surgeon to easily see the connection, which facilitates his work. Moreover, it allows a healing of the soft tissues of first intention as well as simultaneous healing of the hard and soft tissues, which reduces the overall treatment time and leads to improved final aesthetics. Moreover, the absence of mobility between the abutment and the implant at bone level avoids associated bone loss.[1] The transgingival zirconia collar of the Z1 protects the bone from bacterial infiltration. Indeed, zirconia reduces bacterial colonisation compared to titanium.[2] In addition, the attachment and proliferation of fibroblasts is improved, leading to a strong attachment between the soft tissues and the zirconia collar, which leads to a natural reconstruction of the papillae and to an optimal aesthetic result.[3] Aesthetics are additionally accentuated by the natural colour of zirconia, which resembles the colour of natural teeth.[4] Discover the Z1 to combine the advantages of a tissue-level implant and a transgingival zirconia collar!

Literature

TBR Dental Group, France
+33 5 62167100
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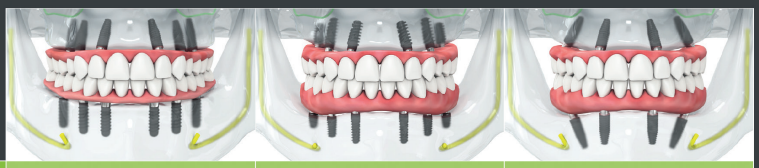

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Literature

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Dental implant quality under scrutiny

Dr Dirk U. Duddeck, Germany

Fig. 1: SEM testing station at the International Dental Show.

On-site SEM analysis of implants at IDS 2021

"Sterile-packaged" does not mean an implant is necessarily free of contaminants. This disturbing realisation is slowly dawning on dentists not only in Europe but also in the US. Exceeding 100,000 subscriptions on CleanImplant's Facebook page, the number of dentists worldwide intrigued by this revelation increased tenfold over the past two years. For the International Dental Show (IDS) in Cologne in Germany coming up in September, the non-profit CleanImplant Foundation based in Berlin in Germany will once again showcase quality checking of dental implants under a scanning electron microscope (SEM). Installed exclusively for this event in Hall 10.2 in collaboration with Thermo Fisher Scientific and the Medical Materials Research Institute, the set-up will provide full transparency of the foundation's quality assessments (Fig. 1). Dentists and manufacturers alike will be able to witness the meticulous and independent quality check of dental implants in detail, from start to finish. The open and public demonstration will allow for spectators to learn about the extent of factory-related contamination of sterile-packaged implants and, most importantly, its direct consequences. The SEM unveils whether an implant meets the strict consensus-based CleanImplant quality guidelines, and dentists are encouraged to participate in finding out whether the implant system used in their practice is actually safe (Fig. 2).

Dentists and patients want clarity

Ever since the "Implant Files" became public in the media, dentists' concerns about substandard medical products worldwide have grown immensely—and rightly so. Current study data demonstrates that one out of three

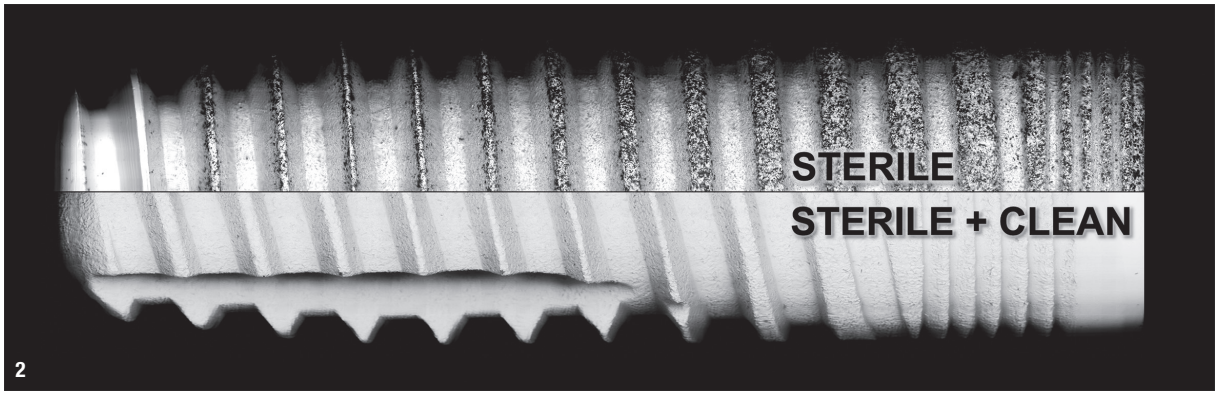


Fig. 2: Full-size high-resolution SEM image mapping of two implants, both samples of systems with U.S. Food and Drug Administration clearance.

implant systems analysed contains technically avoidable impurities. Contaminants include organic particles from the manufacturing process, plastic from packaging, and metallic particles of nickel, tungsten, iron, copper and chromium, just to name a few. Despite the shocking discovery, all of the implants with significant impurities carried the CE mark or had U.S. Food and Drug Administration clearance. When thoroughly analysed, an unexpectedly large number of implant systems fail to keep their promise of delivering clean medical devices. The sterile packaging does not change that either. This ultimately harms patients and endangers implantologists, as products with impurities produce poor clinical results and, upon failure, entail severe legal implications.

Clear the stage for manufacturers

The CleanImplant Foundation has been coordinating worldwide quality assessment studies of dental implants with renowned universities for many years. After a strict peer review process, the Trusted Quality Mark is awarded to particularly clean implant systems only. To date, recipients of the quality seal include selected implant systems by Biotech Dental, bredent medical, BTI Biotechnology Institute, CAMLOG, Global D, medentis medical, MegaGen, Nobel Biocare, NucleOSS, Straumann, Sweden & Martina and Zircon Medical. However, before the coveted Trusted Quality Mark is awarded, each implant system is tested based on five randomly selected samples from multiple batches. At least two of these samples are purchased from anonymous blind shopping or provided directly from dental practices as they would be used on patients, avoiding a possible preselection of testing samples by the manufacturer. Samples must comply with the strict thresholds set in a consensus process by renowned scientists of the scientific advisory board, such as Prof. Emeritus Tomas Albrektsson, Prof. Ann Wennerberg, Prof. Hugo de Bruyn, Dr Michael Norton and Prof. Florian Beuer. Technical cleanliness, however, does not suffice for the time-limited award. After additional proof of successful clinical documentation, the peer review process will determine whether an implant system meets the quality criteria and will thus receive the award. In order to remain relevant and up to date, this process must then be repeated every two years to refresh the quality seal's life cycle.

As of this year, dentists can showcase their commitment to dental excellence and clean implantology by applying to become a "CleanImplant Certified Dentist", ultimately rewarding their patients' trust with backed-up confidence in their chosen implant system. Dental trade show visitors and manufacturers can book appointments in advance for the live demonstration under the SEM. For more information, see www.cleanimplant.org.

Visit the CleanImplant Foundation at IDS 2021 in Cologne, Germany, in Hall 10.2, Booth P032.

about the author

Dr Dirk U. Duddeck studied biology and dentistry and specialised in oral implantology. He is a guest researcher at Charité—Universitätsmedizin Berlin and founder and head of the non-profit organisation CleanImplant Foundation, both in Berlin in Germany.

contact

Dr Dirk U. Duddeck
Head of the CleanImplant Foundation
Berlin, Germany
+49 30 200030190
duddeck@cleanimplant.org
www.cleanimplant.org

Author details

CERASORB® Foam now approved...

...for use with antibiotics

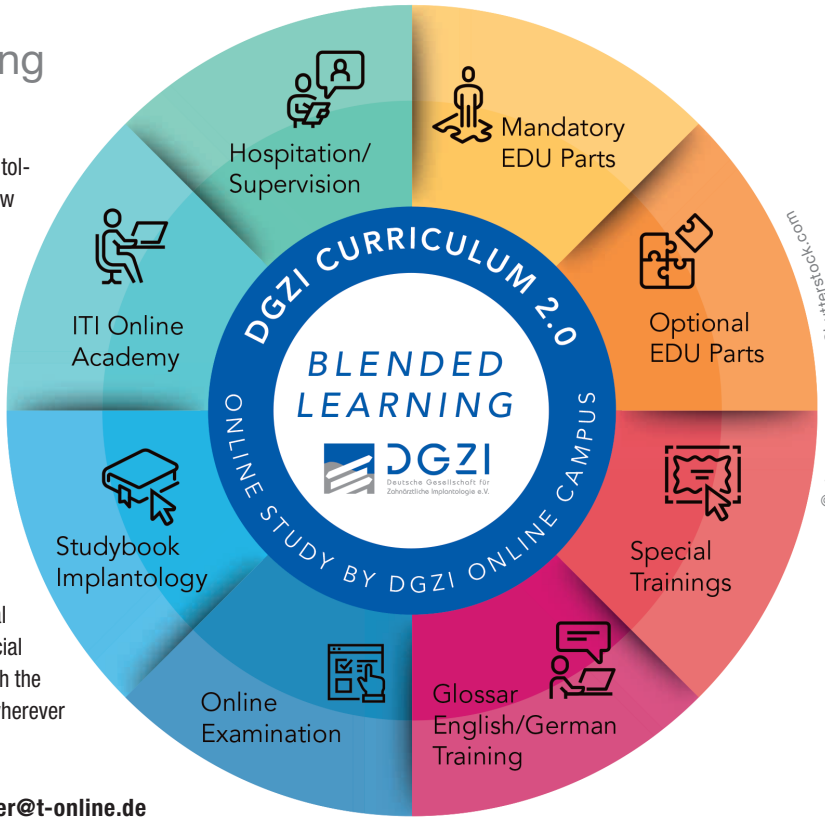
CERASORB® Foam, a resorbable, osteoconductive and cancellous bone-like bone regeneration material prepared from β-tricalcium phosphate and collagen, was recently recertified by curasan AG's notified body with the additional claim for use with antibiotics. The intraoperative combination of CERASORB Foam with a wide range of commercially available antibiotics provides surgeons with a novel option in filling and bridging degenerative and traumatic bone defects. "This is a major milestone in minimising the risk of a reinfection at the defect site. We have been evaluating various antibiotics in combination with our industry leading synthetic bone regeneration materials under laboratory conditions for years and collected important insights and data on the commercially available composite materials in comparison to our products", marks Dirk Dembski, CEO at curasan AG. "With the approval of the claim we have found a consensus for the patients and surgeons", he continues. "Our in-vitro studies have proven that CERASORB® Foam can be soaked to saturation with antibiotic solutions that have been prepared according to the manufacturer's instructions. Vancomycin, Gentamicin, Tobramycin, Refobacin, Imipenem/Cilastatin and Meropenem solutions were tested in the investigations. Our studies have shown, that antibiotically loaded CERASORB Foam shows an excellent initial burst release of the antibiotics into the environment, followed by a long-term elution of the substrates." states Florian Früh, Head of Global Product Management at curasan AG. First successful revision surgeries of infected hip prosthesis and treatment of infected bone areas have been carried out with very promising results. Further clinical investigations are ongoing.

Source: curasan AG

DGZI Online Campus

International online training wherever you are

The structure and content of DGZI's successful implantology curriculum was revised in 2019. All participants now have access to the ITI Academy, where young dentists with little experience in implantology can learn the basics of implant dentistry. All participants in the curriculum will start their training in the new "DGZI Online Campus". This has been completely redesigned and enables e-learning from all devices and from anywhere you have online access. The theoretical basics of implant dentistry are well presented and taught in separate modules. Each module ends with a learning success check, which can be practised as often as required in advance in test examinations. After successful online training, three practice-related compulsory modules and two therapy-related optional modules follow. The curriculum is supported by special learning materials of the DGZI Online Campus. Start with the new concept of the DGZI online training at home or wherever you are—that is Blended Learning! Now at DGZI!



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Contact: sekretariat@dgzi-info.de; info.vollmer@t-online.de

Fifty years of implantology...

...to be celebrated in Cologne

The 50-year anniversary of the German Association of Dental Implantology (DGZI) was initially planned to be celebrated last year in Bremen, Germany, the association's founding city. However, owing to the COVID-19 pandemic-related restrictions imposed by the federal government at that time, the congress had to be postponed. The new date has been set to 1 and 2 October 2021, and the new venue will be the Maritim Hotel in Cologne. For the third Future Congress for Dental Implantology, which is also the 50th International Annual Congress of DGZI, the association is gathering a high-profile group of renowned speakers in perfect keeping with the special occasion. Presidents, past presidents and board members of the German Association of Oral Implantology (DGI), the German Society of Oral Implantology (DGOI), the professional association of German oral surgeons (BDO), the German society for endodontology and dental traumatology (DGET) and DGZI will hold scientific lectures as part of the main programme, according to the event's theme "Visions in Implantology: 50 Years—From single Implant to digital Workflow". Attendees can look forward to a congress that reflects on the past 50 years of dental implantology, addresses topical questions, and envisions the future of this special discipline of dentistry. With an updated structure and content, the organisers have succeeded in eliminating the previous fragmentation of the congress into various separate lecture rooms, workshops and side programmes, sharpening the congress's profile as an event for practitioners as a result. All lectures, panel discussions, livestreamings and the table clinics will take place in the main hall, which will also serve as the industry exhibition area for the myriad of manufacturing companies which will be showcasing their product innovations at the event. For further information, visit www.dgzi.de or contact event@oemus-media.de.

Programme

Source: German Association of Dental Implantology (DGZI)

Fotona

LA&HA Symposium attracts over 2,800 laser enthusiasts

The Laser & Health Academy's annual LA&HA Symposium, held in the first week of June, has continued to break records—in its eleventh edition, the Symposium attracted more than 2,800 participants from 163 countries. It included 60 interesting lectures presenting novel laser treatments, which were followed by discussions led by distinguished experts. In the Dentistry part of the programme, one of the hottest developments presented was Fotona's patented R-SWEEPS® solution for optimising laser assisted irrigation (LAI). R-SWEEPS® is taking the endodontic scene by storm because it delivers the highest possible laser-activated irrigation efficacy and significantly enhances the effective flushing action of SWEEPS®. Additional highlights presented this year include new MarcCo® handpieces for PBM and pain management, the increasingly popular NightLase® application for non-invasive snoring and sleep apnoea treatment, non-invasive aesthetic treatments such as LipLase® lip rejuvenation and plumping, and much more.

Source: Fotona d.o.o

Congresses, courses and symposia

IDS Cologne

22–25 September 2021
Cologne, Germany
www.ids-cologne.de

50th DGZI International Annual Congress— Visions in Implantology

1–2 October 2021
Cologne, Germany
www.dgzi-jahreskongress.de

30th annual scientific meeting of EAO

14–16 October 2021
Milan, Italy
www.eao.org

AAID Annual Conference

10–13 November 2021
Chicago, IL, USA
www.aaid.com/annual_conference

implants
international magazine of oral implantology

Imprint

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

CEO
Ingolf Döbbecke
doebbecke@oemus-media.de

Member of the Board
Lutz V. Hiller
hiller@oemus-media.de

Chairman Science & BD
Jürgen Isbaner
isbaner@oemus-media.de

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

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

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

Dr Suheil Boutros
SMBoutros@aol.com

Editorial Office
Georg Isbaner
g.isbaner@oemus-media.de

Johannes Liebsch
j.liebsch@oemus-media.de

Executive Producer
Gernot Meyer
meyer@oemus-media.de

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

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

Designer
Franziska Schmid
grafik@oemus-media.de

Customer Service
Marius Mezger
m.mezger@oemus-media.de

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

Printed by
Silber Druck oHG
Otto-Hahn-Straße 25
34253 Lohfelden, Germany

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

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

www.dgzi.de
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www.implants.de

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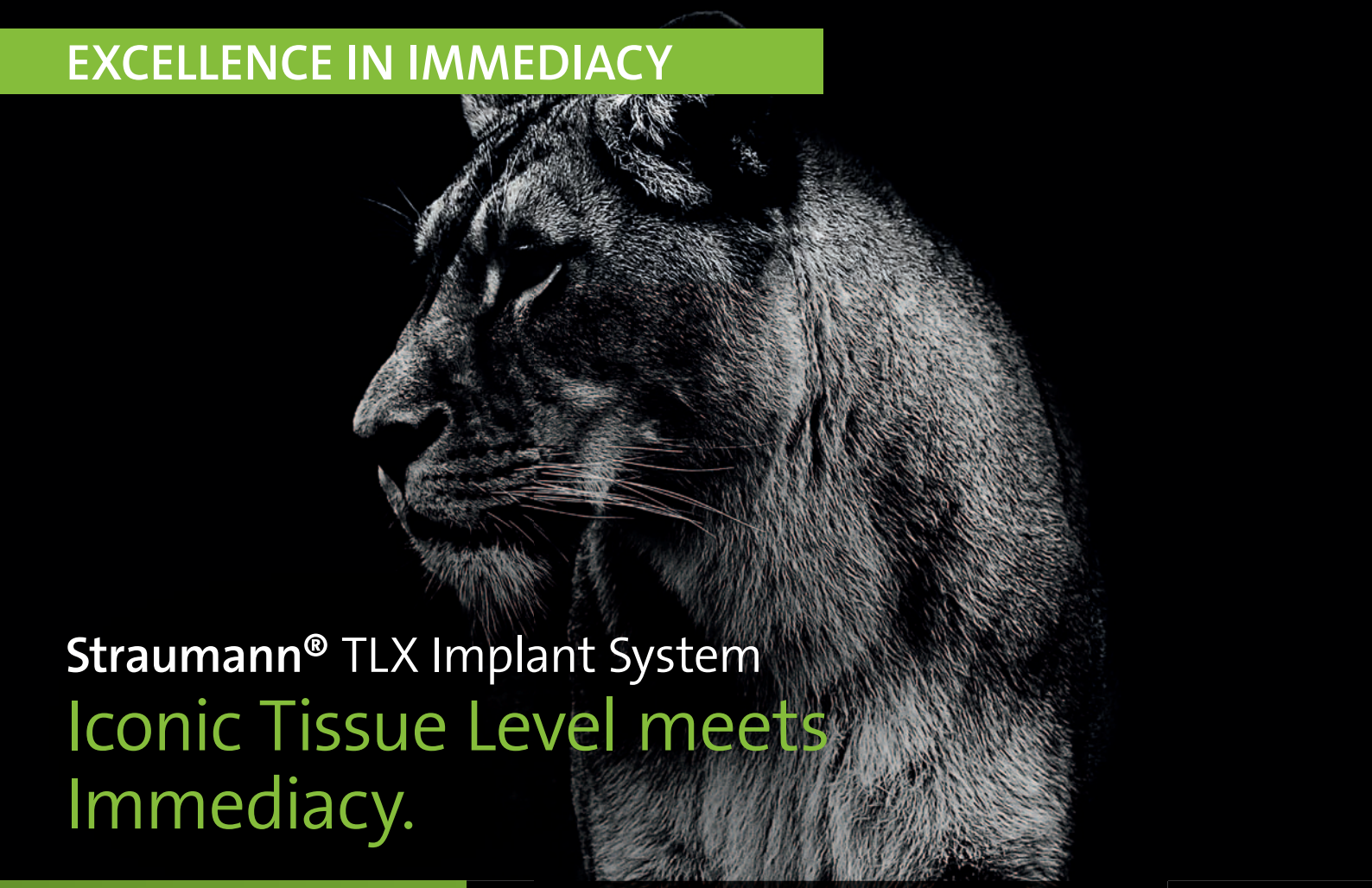

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