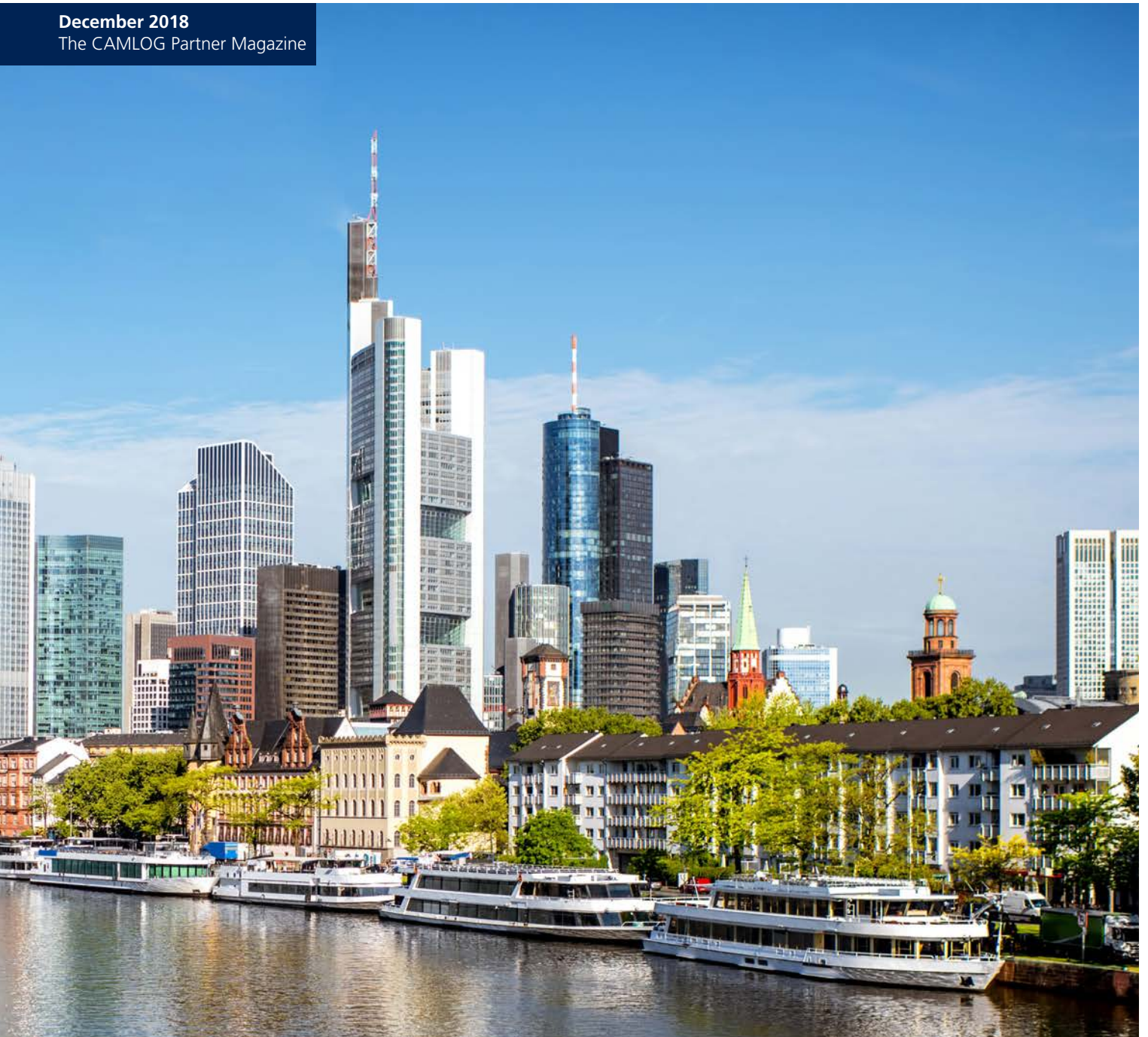


December 2018  
The CAMLOG Partner Magazine



## THE 6TH CAMLOG DENTAL TECHNOLOGY CONGRESS

# 19



**Marc Aurel**

### Dear readers

it's difficult to believe. But the key to success is really quite simple: listening to each other, talking to each other properly, questioning the familiar, realigning oneself mentally and being open to new ideas.

Today you are holding our partner magazine logo in your hands, in which you can find the latest news and interesting facts about CAMLOG.

Next year we will celebrate our 20th anniversary in Germany. During this period CAMLOG developed rapidly. New business fields, areas of responsibility and numerous new projects emerged. This also led to frequent changes. Accepting these changes and repositioning the company accordingly have made CAMLOG a market leader in Germany.

And as everyone knows: success comes to those who inspire their patients or customers. But very few people are aware that it is the enthusiasm of employees that leads the way. One of the most important tasks is therefore not only to motivate our employees, but also to inspire them.

We at CAMLOG have always placed great emphasis on a good communication and corporate culture. Our receptiveness to new ideas, our passion for working as a team and our foresight for the necessary changes are essential components of our success.

In the future, competition among dental practices, laboratories and companies will be governed not only by the brands of products and services, but also by the employer as a brand. It is only in a good corporate climate that the economic success of a company can flourish. In an environment where work is fun, it is easier to become involved, tap one's full potential, develop creativity and drive innovation.

Times are changing and change in our industry opens up many opportunities. Everyone should therefore ask themselves what they can and must do to shape their future in a positive way.

Digitization is in full swing not only in industry as a whole, but also in dentistry and dental technology. In recent years, medical research has created many smart medical devices that impress with their interactive capabilities. As a result, manufacturing technologies are moving at a rapid pace from analog applications to digital workflows.

We at CAMLOG look to the future with great optimism and want to remain on course for the FUTURE together with our customers through excellent products and as many fresh and good ideas as possible.








I wish you a pleasant Christmas Season, many good thoughts and a lot of pleasure while reading.

Sincerely

Michael Ludwig  
Managing Director  
CAMLOG Vertriebs GmbH

**THE HAPPINESS OF YOUR LIFE DEPENDS  
ON THE QUALITY OF YOUR THOUGHTS.**

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# INSIGHTS DENTAL



## INSIGHTS DENTAL, THE PERSONALIZED KNOWLEDGE PLATFORM AND APP

INSIGHTS Dental, the Smart Companion platform, is designed for professional continuing education in dentistry. It was already introduced in April 2018 at the Oral Reconstruction Global Symposium in Rotterdam. Registered dentists have access to a dedicated community, use the personalized dental knowledge platform for expert discussions, benefit from exclusive features such as the Social Wall and current program updates. More than 140,000 surgeons covering a wide range of medical specialties are already using the network worldwide.

The unique technology platform enables the provider, Medical INSIGHTS AG, to independently aggregate neutral medical content from different online sources in an appealing and innovative manner. The mission of Medical INSIGHTS AG, founded in 2011 in Basle, Switzerland, is to become the world's leading, subject-specific, dynamic mobile magazine and information platform for individual medical specialties. A platform that allows specialists to stay up-to-date and to focus on the content that is most relevant to them while interacting with colleagues, thought leaders and industry partners.

### **Time-independent selective further training opportunity**

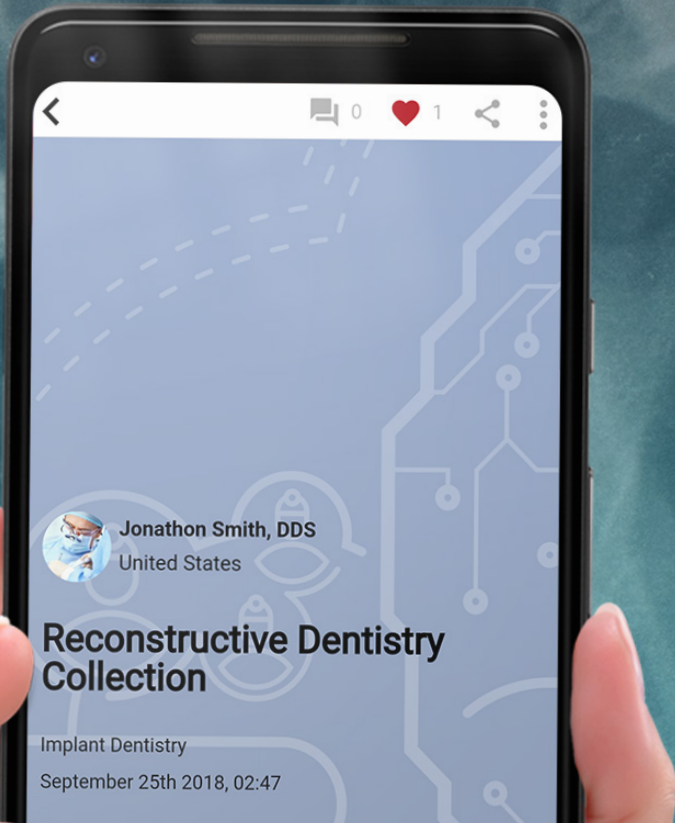
In April 2018, Medical INSIGHTS provided the INSIGHTS Dental global knowledge community app free of charge to professionals working in dentistry and dental implantology. The Oral Reconstruction Foundation was one of the first partners to be integrated into this community platform. Join the knowledge communities and interact with dentists from around the world and exchange views with opinion leaders. Share your knowledge in a global community of practitioners and specialists. The members receive content specially tailored to their

needs from dental journals, PubMed as well as reputable associations.

By utilizing the subject-specific, personalized, up-to-date and mobile knowledge offers you are sent, you can train yourself further according to your needs and in your own time as well as contributing to the further training of others.

### **Personal privacy and data protection are a central focus**

Medical INSIGHTS personalizes the service according to the individual interests of the community members. They have control over all data stored about you



## Join the Dental Community

### Knowledge – made to measure

Save time with personalized access to leading journals, news, case studies, videos and guidelines.

### Network

Interact with the global medical community, discover current opinion leaders and follow their reading recommendations.

### Manage your professional development

Receive your activity report and export it as proof of learning.

in the Community at all times. In an online Personal Learning Record, you can evaluate these data and decide for yourself which of your CPD activities (Continuous Professional Development) are to be stored in your Personal Learning Record and who is allowed to view these data.

#### Tailor-made further education according to individual preferences

Assumption: a member of INSIGHTS Dental begins with the dental implantological care of his patients in his/her practice, becomes increasingly involved with research and development in this field and studies

clinical trials and case studies. Based on his/her profile and implicit behavior in the Community, INSIGHTS Dental assigns him/her topic-related, relevant content. He/she will then also be networked with peers and key opinion leaders according to his/her needs for knowledge, and who will recommend suitable closed Study Clubs for the future.

#### Focus on physicians

INSIGHTS Dental is the open Community of and for dentists and related specialists. The main objective is to optimally support their Continuous Professional Development (CPD) processes. In

its endeavors to optimally promote international exchange, the platform for example offers members opportunities for direct exchange in their native language. The translation services of the platform ensure overall communication in this process. Interested physicians receive free access via downloads of the mobile applications in AppStore and PlayStore or on the Internet directly from <https://dental.insights.md/>.



**Fig. 1:** Initial clinical findings of the fixed reconstruction after 25 years in situ.



**Fig. 2:** The insufficient restoration in the upper jaw with a unilateral free-end situation.



**Fig. 3:** The lower jaw presented with multiple acrylic chipping of the cemented gold bridges.



## COMPLEX REHABILITATION USING IMPLANT-SUPPORTED TELESCOPE CONSTRUCTIONS

Dr. Eleftherios Grizas, Dogern

In addition to restoring chewing function and chewing comfort, the focus of a complete dental restoration is on taking esthetic and phonetic factors into consideration. Furthermore, risk factors for both technical as well as biological complications should be minimized as far as possible. This case report describes how a practice concept for functional and esthetic implant-supported rehabilitation can be developed and therapeutically implemented through consistent planning.

### Initial situation

The 48-year-old patient presented in the practice with the wish for a new complete restoration of her dentition (**Figs. 1 to 3**). According to the patient, the existing fixed reconstructions have been in situ for over 25 years. Due to multilocal secondary caries and chipped veneers, the existing restoration was classified as being insufficient. The X-ray revealed generalized horizontal bone resorption to a medium degree as well as multiple apical osteolysis zones (**Fig. 4**). There were no functional complaints. The patient wished for an esthetic, functional and long-lasting restoration of the upper and lower jaw. There were no known general medical disorders and she was a non-smoker.

Due to the numerous lesions, it was decided to perform extensive surgical reconstruction and to realize rehabilitation with a purely implant-supported resto-

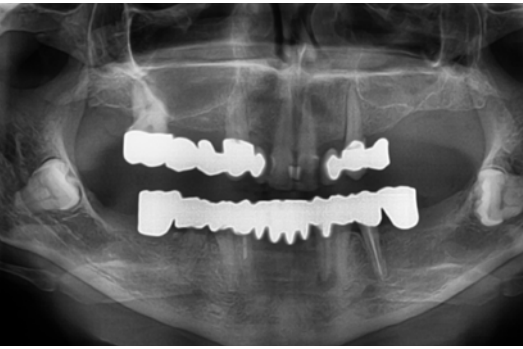
ration using double crowns. To keep the duration of treatment as short as possible and also to maintain the patient's accustomed chewing comfort during the healing period, immediate implant placement with an immediate temporary restoration was to be aimed for.

### Implantological restoration in the upper jaw

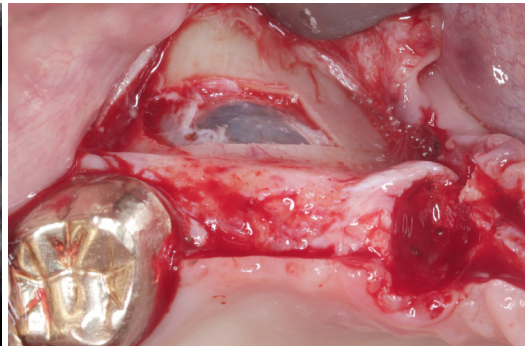
The three-dimensional X-ray examination showed that placement of the implant in the upper jaw would only be possible with bilateral bone augmentation in the sense of an external sinus lift on both sides. After extraction of the teeth, a mucoperiosteal flap was prepared to expose the lateral wall of the maxillary sinus. To gain access to the sinus, a bone cover was prepared osteoplastically using piezo surgery (**Figs. 5 and 6**). The Schneider's membrane was then shifted cranially until the medial maxillary sinus wall was

exposed (**Fig. 7**). A Mem-Lok collagen membrane (BioHorizons®) was inserted to stabilize the elevated mucosa (**Fig. 8**). The prepared bone bed was filled with MinerOss® XP Cancellous (BioHorizons) (**Fig. 9**). The bone cover was repositioned and fixed in the opening to give a precise fit (**Fig. 10**).

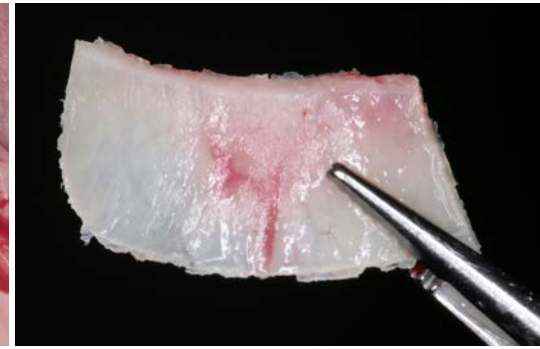
A total of six CAMLOG® SCREW-LINE Implants (region 15, 14, 24, 25 Ø 4.3 mm/L 11 mm, region 13, 23 Ø 4.3 mm/L 13 mm) were inserted (**Fig. 11**). To protect the implants during the healing phase, we decided to use two LODI® implants in region 12 and 22 (Ø 2.9 mm/L 10 mm) for the stable anchoring of the interim restoration (**Figs. 12 and 13**). Within the context of lateral augmentation, existing bone deficits were reconstructed using Mem-Lok® and MinerOss XP Cancellous (**Figs. 14 and 15**). For submerged healing, the soft tissue was closed saliva-proof over the CAMLOG SCREW-LINE Implants. Tooth 16



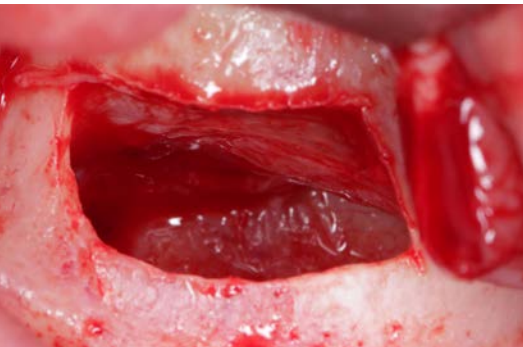
**Fig. 4:** The panoramic tomographic image confirms the inadequate restoration of both jaws.



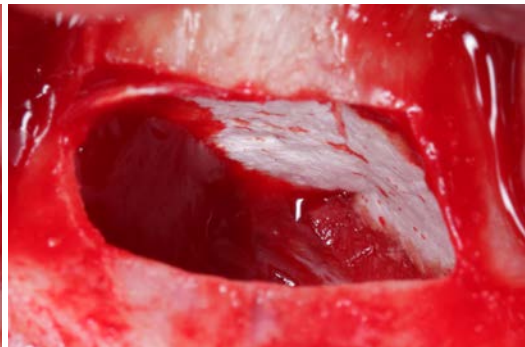
**Fig. 5:** The lateral window was opened using piezo surgery.



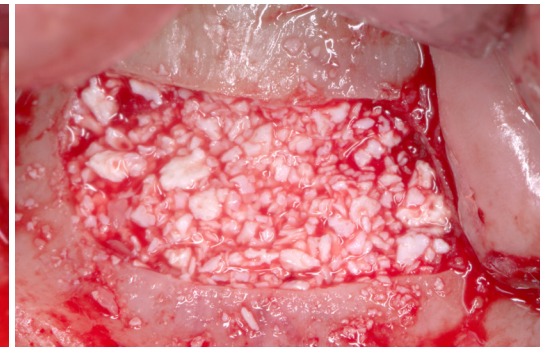
**Fig. 6 :** The prepared bone cover was stored in saline solution for later use.



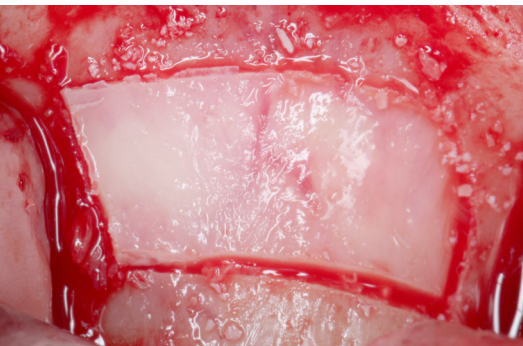
**Fig. 7:** The Schneider's membrane was prepared cranially and the medial wall was exposed.



**Fig 8:** To protect Schneider's membrane, a Mem-Lok membrane (BioHorizons) was inserted into the sinus.



**Fig. 9:** The sinus was filled with porcine bone substitute material MinerOss XP (BioHorizons).



**Fig. 10:** The bone cover was repositioned exactly over the window.



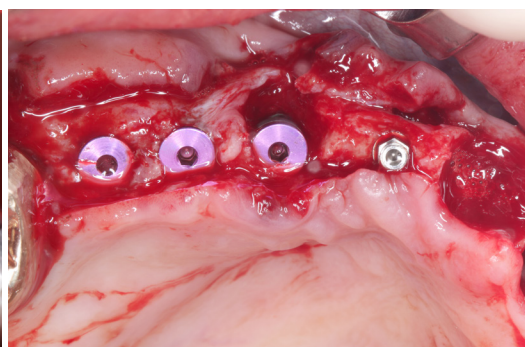
**Fig 11:** The CAMLOG SCREW-LINE Implants (Ø 4.3 mm D/ L11 mm) were placed simultaneously.



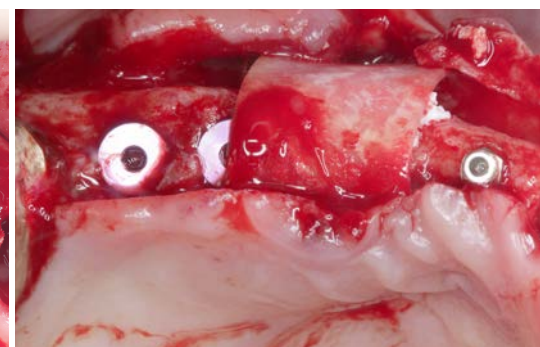
**Fig. 12:** Two LODI implants (Ø 2.9 mm/L 10 mm) were used to anchor the temporary restoration in a stable position.



**Fig. 13:** Insertion of the LODI implant.



**Fig. 14:** Existing bone deficits in region 13 were reconstructed by lateral augmentation with porcine bone substitute material.



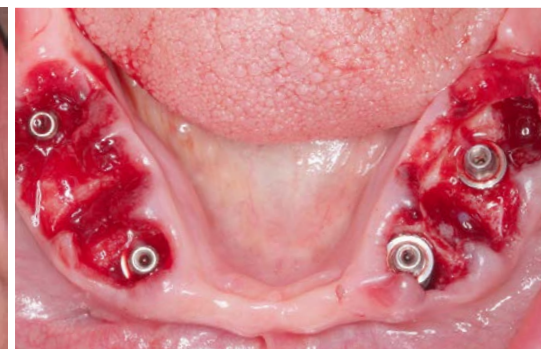
**Fig. 15:** The augmented region was initially covered with a Mem-Lok membrane.



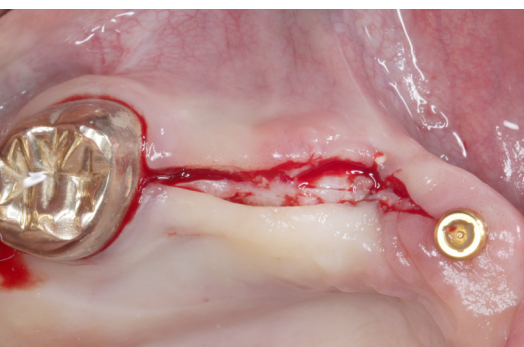
**Fig. 16:** The soft tissue was sutured saliva-proof and tension-free.



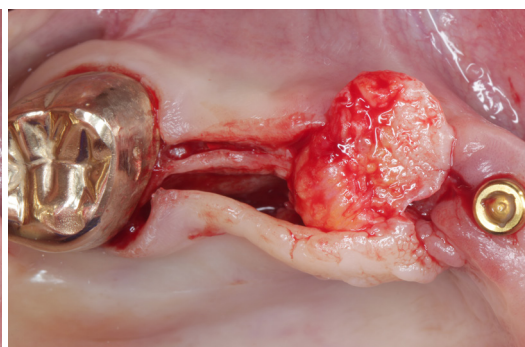
**Fig. 17:** The interim restoration was fixed via locators that had previously been screwed onto the LODI implants.



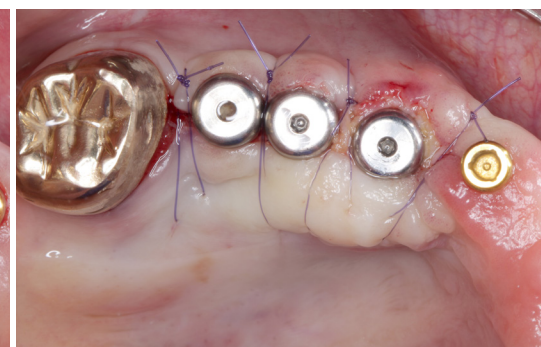
**Fig. 18:** In the lower jaw, the remaining teeth were extracted, four CAMLOG SCREW-LINE Implants were placed and COMFOUR Bar abutments screwed in.



**Fig. 22:** The implants in the upper jaw were exposed via crestal incision.



**Fig. 23:** To improve the soft tissue volume in region 13, a palatally reinforced graft was inserted.



**Fig. 24:** Single button sutures were used to close the soft tissue around the screw-retained gingiva formers.

was left temporarily and incorporated into the temporary restoration. Using two Locators® screwed onto the two Lodi implants, the interim prosthesis could be secured securely and reliably to protect the definitive implants (**Figs. 16 and 17**).

### Implantological restoration in the lower jaw

In terms of restoration of the lower jaw, it was decided to combine extraction of the teeth not worthy of preservation with immediate implant placement and a fixed temporary immediate restoration.

After tooth extraction, four CAMLOG SCREW-LINE Implants (region 35, 33, 43 Ø 4.3 mm/L 11 mm, region 45 Ø 4.3 mm/L 9 mm) were inserted with primary stability. Next, straight COMFOUR® Bar abutments were placed on the four implants (**Fig. 18**). For temporary immediate restoration, we screwed the titanium caps onto the bar abutments without a rotation lock (**Fig. 19**). To prevent the polymer from flowing into the screw access channels of the titanium caps when bonding the acrylic bridge fabricated beforehand, we sealed them with wax

prior to polymerization. After intraoral "bonding", the bridge was removed and the excess acrylic was removed from the bonding areas, the transitions were carefully finished and polished (**Figs. 20 and 21**). After insertion, the construction was checked for a tension-free fit and cleanliness.

### Exposure of the implants in the upper jaw

After a healing period of four months, the six implants in the upper jaw were exposed. In the first quadrant, exposure of the implants was combined with soft tissue augmentation to improve the thin gingival situation of the implant in region 13. Volume augmentation of the peri-implant gingiva was achieved with a palatally reinforced connective tissue graft (**Figs. 22 to 24**).

In the second quadrant, the volume of peri-implant gingiva was found to be adequate. However, keratinization of the peri-implant gingiva was insufficient in the area of the implant in region 23. A zone of keratinized gingiva was achieved buccally to the implants using an apical displacement flap (**Figs. 25 and 26**).

### Impression taking and bite registration of the implants

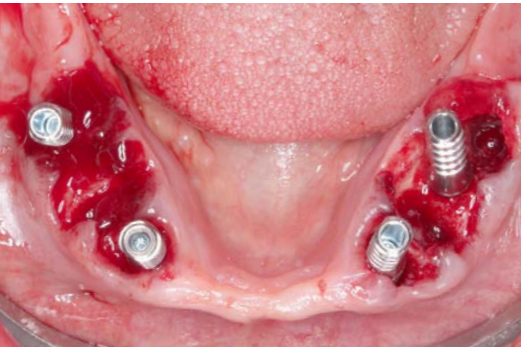
The primary impression of the implants was taken 8 weeks after exposure at implant level using impression posts for the closed impression and a prefabricated impression tray (**Figs. 27 and 28**).

Two registration templates were fixed to the sulcus formers to determine the bite registration. The esthetic and functional criteria such as the dental center, the canine lines and the maximum smile line were defined and marked in the wax wall. The bite height was taken from the temporary prosthesis. Registration material applied to the templates encoded the bite registration (**Fig. 29**). Facebow registration was used for extraoral registration.

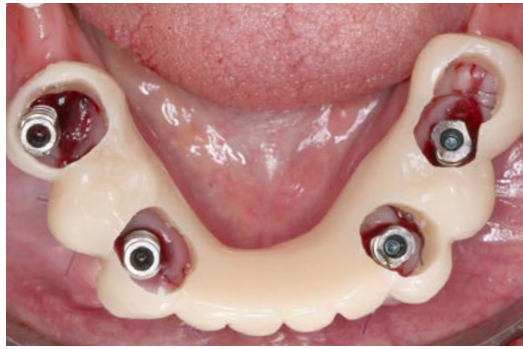
### Intraoral bonding – pick-up impression

In the laboratory, the models were fabricated and a complete diagnostic set-up was implemented in wax. A wax try-in is indispensable to ensure a functionally ideal and esthetically appealing prosthetic

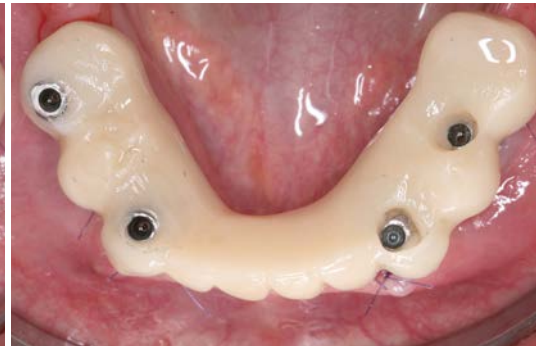




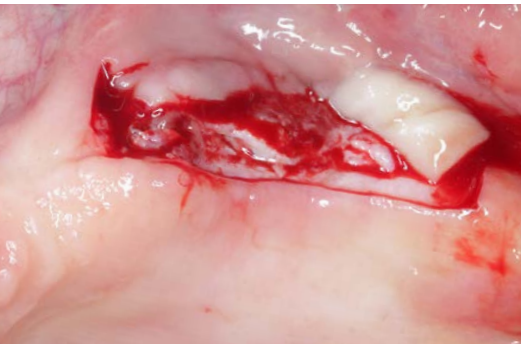
**Fig. 19:** The COMFOUR Titanium caps were screwed on before closure of the soft tissue.



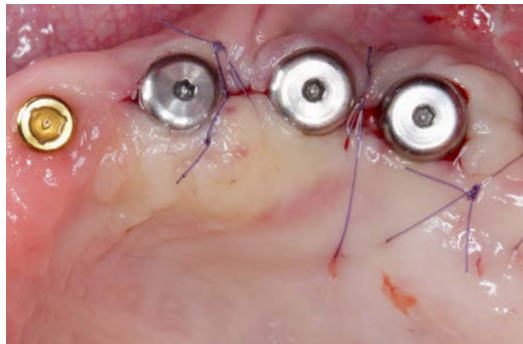
**Fig. 20:** The prefabricated restoration was checked intraorally for tension-free status.



**Fig. 21:** The titanium caps for the immediate screw-retained temporary restoration were polymerized using PMMA plastic.



**Figs. 25 and 26:** In the second quadrant, an apical displacement flap was prepared during exposure to increase the keratinized peri-implant mucosa.



**Fig. 27:** The impression was taken eight weeks after exposure.



**Fig. 28:** The primary impression was taken with prefabricated trays and the impression posts for the closed technique.



**Fig. 29:** The registration templates were fixed in a stable position on the gingiva formers during determination of the bite registration.



**Fig. 30:** A wax try-in is indispensable for checking the functional and esthetically pleasing overall restoration.

restoration (**Fig. 30**). The preparatory measures for the fabrication of the individual CAD/CAM abutments were taken on the basis of this set-up. These were designed virtually and ordered from the DEDICAM fabrication service. The individual telescope abutments were inserted definitively and mounted with the torque recommended by the manufacturer (**Figs. 31 to 33**). The galvanically fabricated secondary crowns

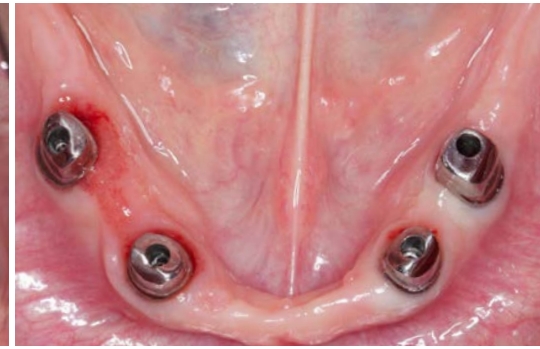
were placed on the primary crowns (**Figs. 34 and 35**). Tooth 16 as well as the LODI implants were extracted. The treatment protocol calls for intraoral bonding of the secondary crown to the tertiary framework, under confirmation of the determined bite registration (**Figs. 36 and 37**). A pick-up impression of the framework was then realized using an individual tray. As the abutments remain in the mouth with this concept, a specially



**Fig. 31:** The telescope solution was realized with custom-made CAD/CAM telescope abutments and galvanic caps.



**Fig. 32:** The individual DEDICAM abutments or primary parts were screwed in. Tooth 16 and the LODI implants in region 12, 22 were removed in this session.



**Fig. 33:** The screw-retained temporary restoration and the COMFOUR Abutments were removed from the lower jaw and the four DEDICAM telescope abutments were placed.



**Fig. 37:** The splints for determining bite registration had been prepared in the laboratory on the tertiary frameworks.



**Fig. 38:** The temporary restoration in the upper jaw was smoothed at the points of the primary parts and relined there with permanent soft relining material.



**Fig. 39:** As the telescope abutments remain in the mouth until the final restoration, a prefabricated travel prosthesis was placed in the lower jaw.

fabricated replacement prosthesis was used for the intermediate restoration. This so-called travel prosthesis can serve as a temporary solution for the patient in the event of repairs to her restoration. **(Figs 38 and 39).**

### Finishing

The placement of the final denture takes less time, as the supraconstruction fits precisely due to the exact intraoral bonding and no longer makes any friction correction necessary. **(Figs 40 and 41).** The consolidation of the BRM as well as the good peri-implant bony conditions are shown in the x-rays **(Figs. 42 to 45)** after placement of the definitive denture.

### Discussion

The double crown technique on implants is able to offer esthetically appealing solutions while at the same time offering patients a high level of safety in terms of function and stability [1]. Furthermore, the fixed but removable prosthetics offer universal sustainability when external

help is needed in old age or in case of repairs, and last not least in case of dental treatment. The removable denture also guarantees good hygienic capability and a desirable good prognosis as a result [2,3].

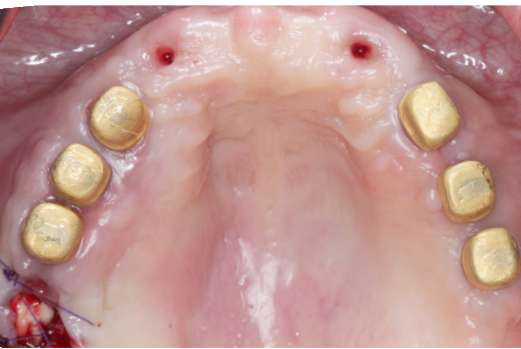
Due to their easy handling and small diameter, the one-piece LODI implants can be used to stabilize the temporary restoration for implant-protected healing. In the present case, we decided to integrate them into the treatment plan as interim implants. The integration on the resilient locators was not an option for the treating team for the telescope restoration.

### Acknowledgements

My sincere thanks go to the friendly patient as well as to my consistently motivated professional treatment team. I am especially indebted to MDT Robert Russek, who supports me daily with advice and assistance with his profound dental technical knowledge.

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- [3] Weng D, Richter EJ. Maxillary removable prostheses retained by telescopic crowns on two implants or two canines. *Int J Periodontics Restorative Dent*. 2007;27:35-41



**Fig. 34:** The galvanic caps were attached to the abutments.



**Fig. 35:** The galvanic caps were silanized for bonding in the mouth.



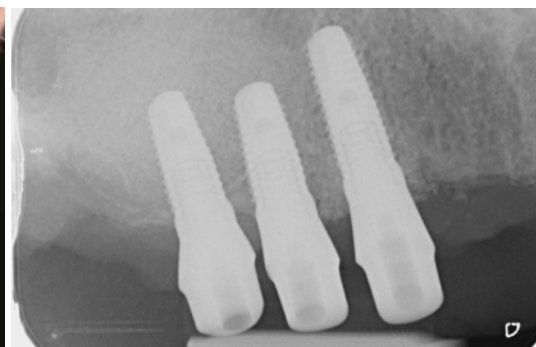
**Fig. 36:** The prefabricated tertiary framework was prepared for intraoral bonding. Bite registration was determined on a precisely fitting tertiary framework.



**Fig. 40:** Incorporation, functional testing and checking of the hygienic capability proceeded smoothly and quickly due to the intraoral bonding.



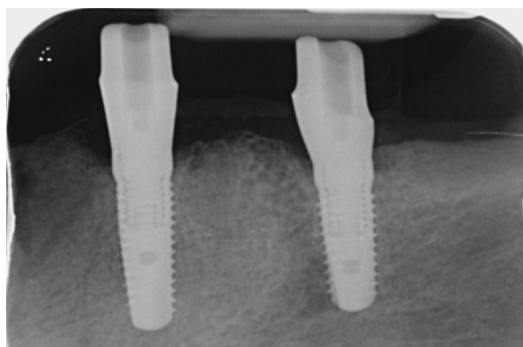
**Fig. 41:** The lateral view shows the individuality of the telescope restoration.



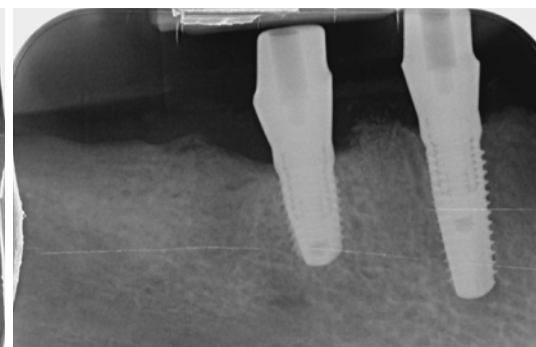
**Fig. 42:** The radiological condition in the upper jaw after insertion of the final dental prosthesis.



**Fig. 43:** The bone substitute material is consolidated very well.



**Figs. 44 and 45:** In the lower jaw too, the peri-implant bony conditions are irritation-free after insertion of the definitive restoration.



## AUTHOR



### Contact details

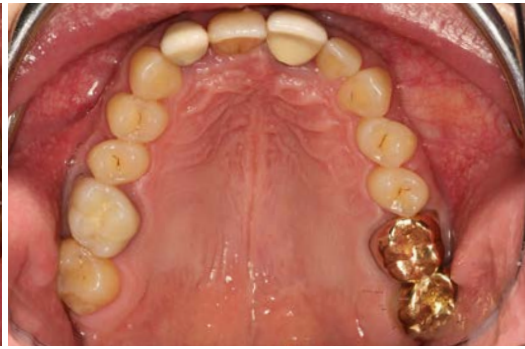
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### Dr. Eleftherios Grizas

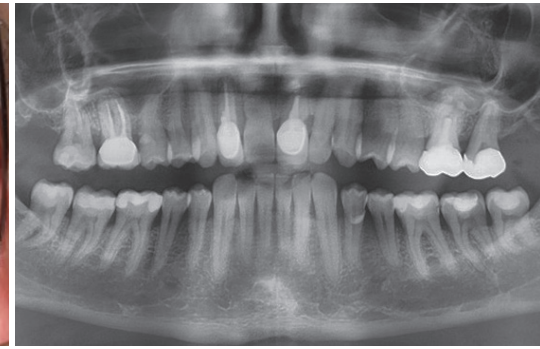
Dr. med. dent. Eleftherios Grizas has been practicing as a dentist and oral surgeon at MKG Hochrhein in Dogern near Waldshut since 2013. His clinical specialties include the complex complete implant-based rehabilitation, peri-implant soft tissue management as well as implant prosthetics. After his studies at the University of Athens in Greece, he received his doctorate in 2010 under Prof. Dr. Lauer at the Polyclinic for Dental Prosthetics at the University Hospital Frankfurt. He completed his 3-year specialist training as an oral surgeon in 2013 at the Polyclinic for Dental Surgery and Implantology under Prof. Dr. Nentwig at the same dental faculty. Between 2013 and 2015, he worked as a tutor for Dr. Weigl in the Department of Postgraduate Education as part of the Master of Science (MSc.) in Oral Implantology.



**Fig. 1:** The initial situation revealed inflammatory tissue in the anterior region of the upper jaw.



**Fig. 2:** During the intraoral examination the loosening of the multiple resected anterior teeth 11, 21 and 22 was ascertained.



**Fig. 3:** The DVT showed clear apical resorption of tooth root 11 and apical lesions on all three anterior teeth.



## IMPLANT ESTHETICS INTERPLAY BETWEEN SUPERSTRUCTURE AND SOFT TISSUE

PD Dr. Gerhard Iglhaut, Memmingen

An important interface for implant-prosthetic restorations in the esthetic region is the emergence profile of the superstructure. In addition to correct implant positioning, an adequately and anatomically shaped jawbone is therefore just as essential as a thick, fixed gingiva for a long-term stable reconstruction – both from an esthetic and biological point of view. The following clinical case presentation describes a treatment concept following anterior tooth trauma with immediate implant placement as well as hard and soft tissue augmentation [1].

Immediate implant placement is a challenge for the treating team, especially in the esthetic zone. Despite high survival rates, the risk of postoperative complications is relatively high [2]. The reason being resorption of the peri-implant hard tissue and subsequent buccal recession of the soft tissue. This often leads to the exposure of titanium surfaces and consequently to considerable esthetic impairment. Furthermore, these defects are rather difficult to correct. A proactive treatment protocol taking which takes the biological remodeling processes into consideration is indispensable for the reconstruction or preservation of stable peri-implant tissue.

### Patient's medical history

In January 2015, a 49-year-old man with complaints in the anterior region of the maxilla presented in the practice. He stated that he had been in an accident over 20 years ago and had suffered

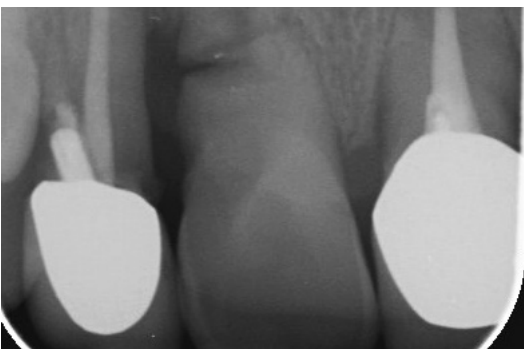
a trauma in the anterior region. The anterior teeth 12 and 21 were treated endodontically *alio loco* and restored with post abutments and ceramic veneered crowns. Over time, both teeth had been resected several times. During intraoral examination, a loosening of teeth 12, 11 and 21 was observed. The DVT showed intact alveoli on 12 and 21, partial bone loss of the facial lamella in region 11 as well as a distinct apical resorption of tooth root 11. All three anterior teeth exhibited apical foci (**Figs. 1 to 6**).

### Therapy planning

The prognosis for the preservation of the above mentioned anterior teeth was judged to be very unfavorable. Consequently, the resulting indication implied extraction of teeth 11, 12 and 21. For esthetic reasons, a bridge reconstruction on two implants in region 12 and 21 was planned. Treatment with immediate implantation was chosen to

counteract the natural healing of the alveolar socket, which may result in a flattening of the interdental papillae and the facial contour of the alveolar process. By considering the biological remodeling processes and adequate hard and soft tissue augmentation, an esthetic result can be planned proactively. With three implants, the required minimum distance of 4 mm between the implants ( $\varnothing$  3.8 mm) would not have been given. In addition to the height of the alveolar bone, the thickness of the vestibular lamella is a prerequisite for creating an ideal emergence profile. The bone also supports and stabilizes the harmonious contour of the gingival profile – the criterion for the long-term success of an esthetic reconstruction.

To preserve esthetics, the positioning of the implants is just as important as the consideration of biological factors. For sufficient stability of the buccal bone wall, the circular bone in the region of



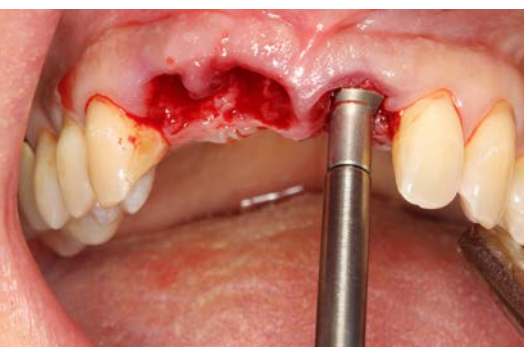
**Fig. 4:** The alveoli on 12 and 21 were intact, but partial bone loss was visible on the facial lamella in region 11.



**Fig. 5:** The sectional view of tooth 21 showed congested root filling material and the fractured root tip.



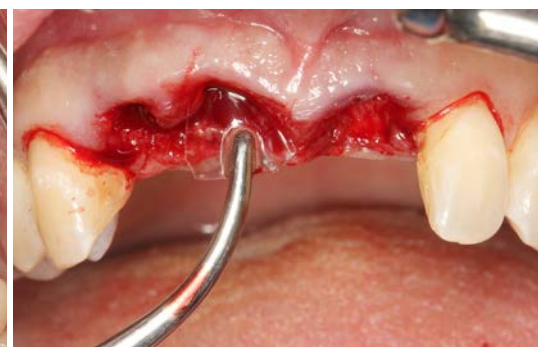
**Fig. 6:** The sectional view shows the loss of facial lamella and root resorption of tooth 11.



**Fig. 7:** After gentle extraction of the teeth, the implant positions were determined using the 3D implant positioning system.



**Fig. 8:** To preserve the buccal bone wall, the sagittal orientation of the implants was aligned palatally.



**Fig. 9:** To create an anatomically shaped alveolar ridge, an alveolar protector was inserted into the prepared mucoperiosteal pocket.

the implant neck should be developed or preserved to a thickness of approximately 2 mm. For this reason, it is necessary to align the implant position in the sagittal dimension towards palatal and to build up a distance of approx. 2 mm [3;4] (“jumping distance”) between the facial bone wall and the buccal implant neck. The cavity between the implant and the bone lamella should be filled with modern bone substitute materials to ensure safe filling of the gap with bone.

### Implant surgical intervention

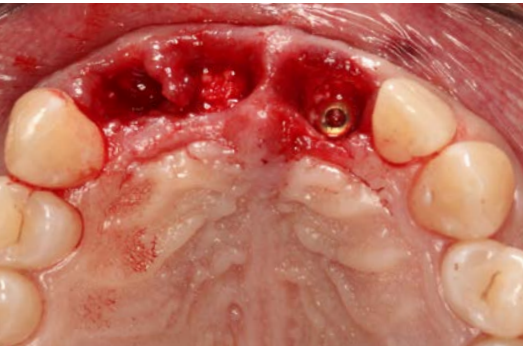
To avoid postoperative wound infections, the patient was given antibiotic cover preoperatively. 1000 mg amoxicillin three times a day for one week was given as preventive treatment. First, the teeth were extracted gently using a periosteal elevator to preserve the bony structures and the alveoli were cleaned of inflammatory tissue residues using a bone curette. Implant positioning was performed using the 3D implant positioning system [5]. To preserve the buccal bone wall, the sagittal orientation was aligned palatally. The vertical positioning depends on the buccal bone margin level and the implant

hardware and is determined by measuring the biological width of the adjacent tooth. The distance between the gingival margin to the bone was 3 mm in each case. The expansion of the sleeves corresponds to the most common implant diameters (3.3; 3.8 and 4.3 mm), taking into account the required distance of 2 mm to the adjacent tooth or 4 mm between two implants. First, the implant positions in region 12 and 21 were determined by placing the 2 mm extension of the sleeve against the buccal wall of the alveolus (**Figs. 7 and 8**). Pilot drilling for the exact 3D alignment was performed centrally through the sleeve. The implant sites were prepared for the insertion of two implants (tapered internal implant Ø 3.8 mm/L 11 mm, BioHorizons, Birmingham, AL) with the appropriate system drills. The implants were inserted with primary stability and the “Jumping Distance” of approx. 2 mm was filled with bovine bone substitute material (MinerOss® X Granulate/BioHorizons) to stabilize the bone wall.

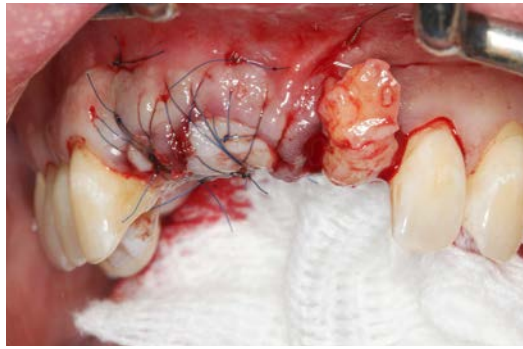
Subsequent augmentation of the alveolar bone in region 11 to reconstruct the buccal wall was performed with the alveolar protector (KLS Martin, Tuttlingen). The shape of the protector made of resorbable

poly-D-L lactide allows the three-dimensional construction of the alveolar ridge with a minimally invasive procedure. [6]. The protector is dimensionally stable and the degradation process begins after about 4 months. Bone augmentation is essential to create an anatomically shaped alveolar ridge and to maintain a natural mucogingival margin. After the minimally invasive preparation of a mucoperiosteal flap, the alveolar protector was inserted into the prepared pocket (**Fig. 9**). Owing to this flap formation, the protector could be inserted exactly, so that the system-inherent fixation using a pin with ultrasound (Sonic Weld) became unnecessary.

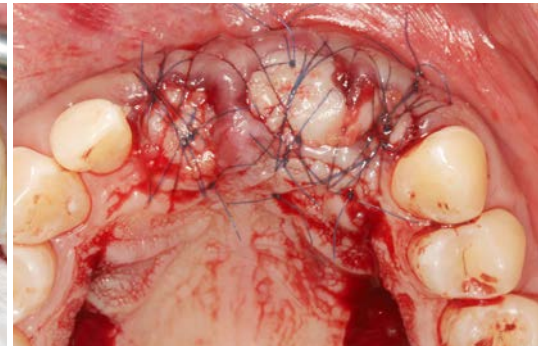
Augmentation was performed with MinerOss X (BioHorizons). The bone substitute material is well suited for alveolar management. With a particle size of 250 to 1000 µm, it can easily be inserted into the defect site. The bimodal pore structure leads to rapid blood uptake of the material (**Fig. 10**). The natural consistency and the complex trabecular framework promote ideal new bone formation. Slow resorption rate provides the required stability for the buccal wall.



**Fig. 10:** Augmentation of the defect site and filling of the jumping distance was performed with the bovine bone substitute material MinerOss X.



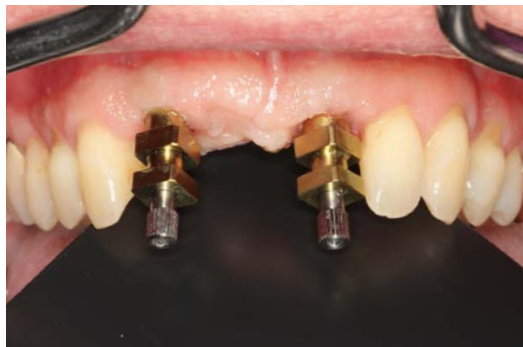
**Fig. 11:** The free combined connective tissue-mucosa grafts were placed on the alveolar openings with the epithelial supporting part.



**Fig. 12:** The connective tissue part of the combination graft was placed under the vestibular mucosa and the grafts were then sutured saliva-proof.



**Fig. 16:** The peri-implant soft tissue, which was thickened with the rolled flap technique during exposure, had healed stably by the time the impression was to be taken.



**Fig. 17:** During impression taking (open tray technique), the attached soft tissue with a clearly developed incisal papilla was visible.



**Fig. 18:** A removable gingival mask is essential for the design of the subgingival abutment portion.

### Covering the defect site

A saliva-proof primary wound closure is essential for the success of bone reconstruction. The bacteria-tight wound closure prevents inflammatory-resorptive remodeling processes. In the present case, the extraction wounds were covered with free combined connective tissue-mucosa grafts taken from the palate in regions 13 to 15, 23 to 25 and 16 to 18. The grafts were de-epithelialized by approximately half. The combined grafts were placed on the alveolar openings with the epithelial supporting section and under the vestibular mucosa with the connective tissue section. Then the grafts were sutured saliva-proof (**Figs. 11 and 12**). The bilaminar provision of connective tissue increases nutrition to the grafts and thus ensures complication-free closed healing [7]. In addition to better integration, soft tissue thickening and stabilization occurs both vertically and horizontally in the esthetic zone. This preventive procedure is indispensable for achieving a natural emergence profile. In addition, it minimizes the shrinkage of the localized fixed gingiva [8].

The preoperatively fabricated temporary restoration was used in the form of an interim prosthesis with a palatal plate. The bases of the three replaced front teeth had been shortened to avoid unfavorable pressure during the swelling phase. The prosthesis also served as a dressing plate to protect the graft harvesting sites (**Fig. 13**).

A stable soft tissue situation was observed following suture removal after two weeks and after healing without complications (**Figs 14 and 15**). The implants were exposed four months after insertion. The incision was placed slightly palatal around the implants. Next to exposure, this cutting technique allowed the formation of two rolled flaps for additional soft tissue thickening. The flaps were de-epithelialized, buccally wrapped in tunnels and fixed with sutures. An impression taken six weeks later revealed a stable, fixed peri-implant soft tissue with a clearly developed incisal papilla. The transfer posts for the open tray technique were used to take an impression of the two implants and the entire upper jaw (**Figs. 16 and 17**).

In the laboratory, the dental technician fabricated the master cast with removable gingival mask and mounted it in the articulator in which the temporary restoration had previously been fabricated with facebow transfer. Using a matrix from the esthetic set-up, he drew the crown emergence profile on the removable gingival mask and contoured the subgingival area to the implants and the pontic according to the anatomical profile ("ovate pontic design"). The design of the subgingival portion of the abutments and pontics is essential for a natural crown emergence profile. Zirconium dioxide ( $ZrO_2$ ) has proven itself for superstructures in the anterior region, not only because of the stability and flexural strength of the material, but also because of the significantly reduced microbial colonization of  $ZrO_2$ . In a systematic review [9], Nakamura et al. (2010) conclude that zirconium dioxide abutments can be used for single-tooth restorations in the anterior region with a high degree of reliability. The transition to the mucous membrane is free of irritation, which ensures long-term stable clinical results. Due to the root-like color,



**Fig. 13:** To avoid unfavorable pressure during the swelling phase, the interim prosthesis was shortened in the anterior region.



**Fig. 14:** After healing without complications, a stable soft tissue situation was observed two weeks postoperatively.



**Fig. 15:** The augmented anterior tooth region presented itself with an anatomically shaped contour prior to exposure surgery.



**Fig. 19:** The zirconium dioxide abutments were fabricated using the CAD/CAM process and bonded to titanium bases.



**Fig. 20:** The zirconium dioxide bridge framework was designed digitally, milled and fully veneered with corresponding zirconia materials.



**Fig. 21:** The subgingival part of the abutments and the "ovate pontic design" design of the bridge pontic support an esthetic crown emergence profile.



**Fig. 22:** The crown margin was placed 0.5 mm to 1 mm below the mucosa border in order to remove cement residues effortlessly.



**Fig. 23:** Due to the anatomically shaped emergence profile, the peri-implant mucosa was displaced vestibularly with slight pressure.



**Fig. 24:** The soft tissue was supplied with blood after a short time. The oral view shows the anatomical shape of the augmented jaw region.

the subgingival part closely resembles the natural appearance of a tooth. The abutment design was created digitally, fabricated using a CAD/CAM process and bonded to titanium bases. The crown margin was placed 0.5 mm to 1 mm below the mucosal border so that the cement could be removed effortlessly when inserting the bridge. Then the zirconium bridge framework was designed digitally, milled and fully veneered with the corresponding zirconium materials (Figs. 18 to 21).

The definitive implant restoration was inserted in mid-December 2015. After the gingiva formers had been removed, the internal configurations of the implants were rinsed and the hybrid abutments screwed in. Due to the submucous anatomical shape of the emergence profile, the round shaped peri-implant mucosa was displaced vestibularly with slight pressure (Figs. 22 to 24). A diamond was used to contour the gingiva for the pontic support in the form of an ovate pontic. The peri-implant gingiva was well

supplied with blood after approximately ten minutes. After checking the esthetics, function and phonetics, the bridge was integrated definitively to the satisfaction of all concerned (Durelon, 3M Espe, Herrsching). With the help of analog abutments, excess cement was removed before insertion and surplus cementing was avoided (Figs. 25 to 27).

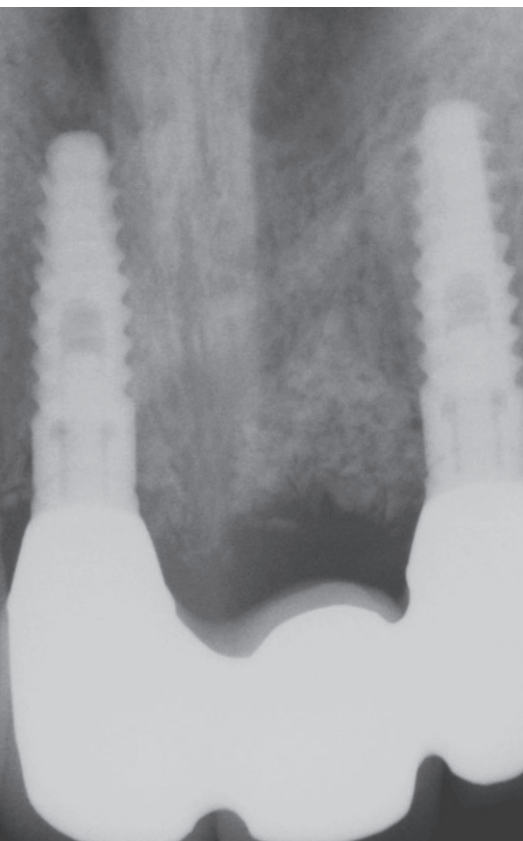
In the follow-up after three years, both the control X-ray and the clinical image show the successful esthetic and long-



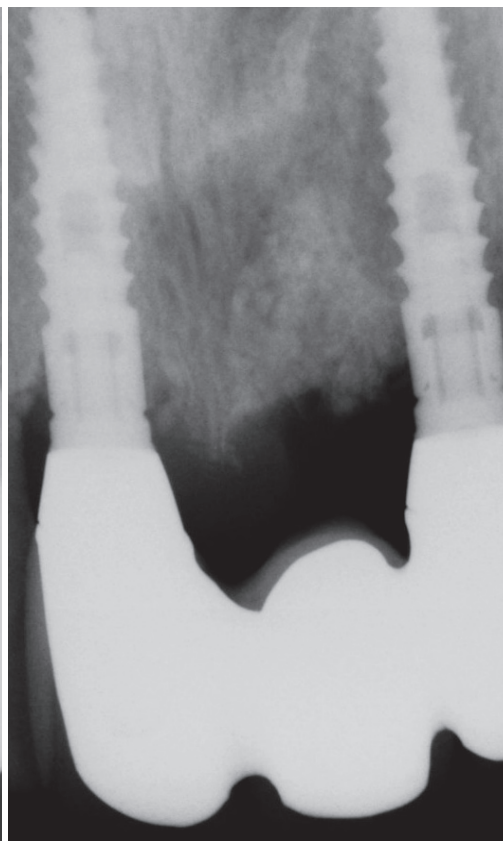
**Fig. 25:** With the help of analog abutments, excess cement was removed before insertion and surplus cementing was avoided.



**Fig. 26:** After the functional and esthetic check, the bridge was inserted definitively to the satisfaction of everyone involved.



**Fig. 27:** The X-ray control image at the time of insertion.



**Fig. 28:** In the follow-up after three years, the anterior tooth reconstruction is stable.



**Fig. 29:** The clinical picture at the follow-up shows the healthy fixed gingiva and the harmonious contour of the gingival garland, which was supported by contouring the gingiva with a diamond for the bridge support prior to the insertion of the reconstruction.

term stable anterior tooth reconstruction with a healthy fixed gingiva and the harmonious contour of the gingival garland (**Figs. 28 and 29**).

## Conclusion

Esthetic maxillary anterior reconstruction is one of the greatest challenges in dental implantology. When extracting non-sustainable teeth, it is important to preserve the intact facial lamellae or to regenerate both the alveolar ridge as well as the alveoli by augmentation. The stabilization of the bone lamella around implants with slowly resorbable bone substitute materials has proven successful.

The design of the subgingival abutment portion plays a decisive role for the long-term stability of the esthetic result. The individually fabricated CAD/CAM zirconium abutments support the peri-implant soft tissue, are biocompatible and reduce the risk of inflammation around the implant/abutment interface. The emergence profile is determined by the anatomically correct design of the superstructure and contributes significantly to the harmonious overall impression of the reconstruction. The prosthetically oriented placement of the implants and the indication-related design of the abutments optimally transfer the occurring chewing forces to the internal configuration of the implants and prevent damaging shearing forces on the implant neck. This supports peri-implant bone preservation and promotes gingival adaptation.



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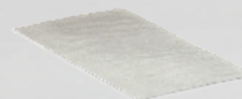
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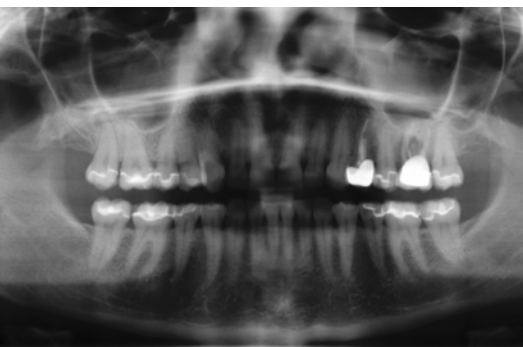


## BIOMATERIALS – FOR DIFFERENTIATED INDICATIONS

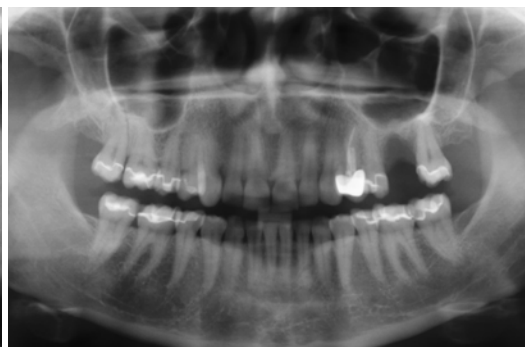
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**Fig. 1:** The initial situation on the OPG. Tooth 26 is not worth preserving due to a perio-endo lesion.



**Fig. 2:** Radiologically, there is a pronounced vertical defect in region 26.



**Fig. 3:** Clinical, healed situation three months after extraction. There is only a slight transversal deficit from occlusal.



## RECONSTRUCTION OF A THREE-DIMENSIONAL BONE DEFECT WITH PATIENT-SPECIFIC CAD/CAM TITANIUM MESH

Dr. Amely Hartmann, Dr. Marcus Seiler MSc. MSc., both Filderstadt, Dr. Silke Stuff, Pforzheim

Digital workflows in implant dentistry, surgery and prosthetics have found their way into many dental practices today. The scientific topicality and relevance of this field of research also becomes clear when one considers the number of recently published publications on the subject [1-4]. This case report describes a surgical digital workflow in which a single-tooth implant-prosthetic prosthesis is performed with an individual bone reconstruction. Clinical and radiological results after 2 years are presented.

The trend towards individualized (dental) medicine enables patient-specific therapy concepts far detached from ready-made molded parts and procedures. Therapeutic measures are offered on the basis of Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) technologies and 3-dimensional (3D) printing. This also includes patient-specific titanium meshes [5-7], which are used in the course of surgical bone augmentation. Generally speaking, this should shorten the intervention time through the associated digital workflows. This is possible as the intervention is simulated virtually on the computer beforehand. The three-dimensional implant position and prosthetic restoration are part of the initial planning here. The contour of the mesh is also designed digitally such that the bone is later rebuilt at the prosthetically ideal position calculated through backward-planning. Studies

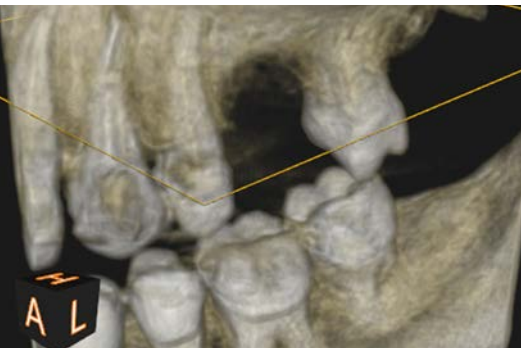
indicate that intraoperative pre-bending, as is the case with ready-made meshes, is eliminated, reducing patient co-morbidity through faster intervention [5, 8]. The active principle is that the lumen to be augmented is supported, thus avoiding soft tissue collapse. Bone grafts protected by titanium meshes exhibit significantly lower bone resorption [9].

Individual titanium meshes can be used for all types of jaw defects, especially the pronounced vertical and three-dimensional reconstructions [10]. Classical alternatives for vertical reconstruction would include segment osteotomy, the onlay technique, distraction osteogenesis or block augmentation. [11, 12]. Purely transversal deficits can be compensated by the ridge-splitting technique, classically by the membrane technique of Guided Bone Regeneration (GBR), or the use of block augmentations [13]. Three-dimensional

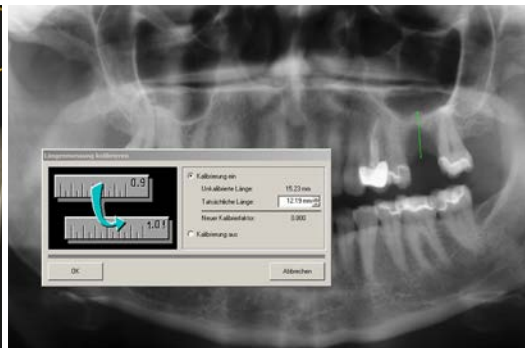
defects can also be treated using block augmentations or interposition plasty. Here, the autologous blocks are harvested from intraoral and extraoral donor sites. Transplant resorption is to be expected via remodeling of the bone. This knowledge requires distinct overcontouring in planning, as melting of a part of the transplant is to be expected. Increased morbidity of the patient due to a larger harvesting site can result as a consequence as can more difficult soft tissue management at the recipient site.

### Patient case

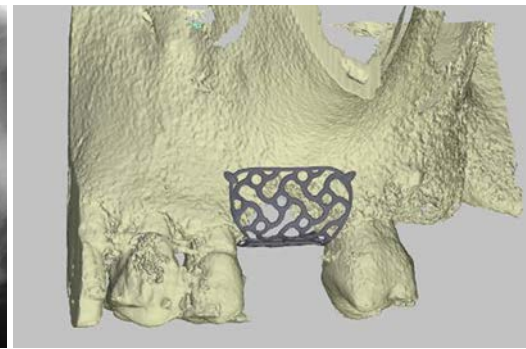
The 44-year-old patient presented for the first time on 03.02.2015 with complaints in region 26. The patient did not report any abnormalities in her general medical history. She is a non-smoker. When the dental anamnesis was taken, tooth 26 was not worth preserving (**Fig. 1**) due



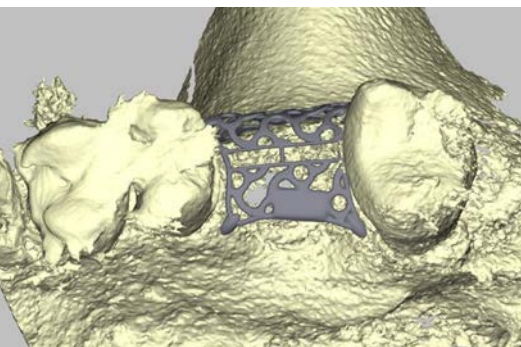
**Fig. 4:** The virtual 3D model for implantological planning confirms the defect situation. As an additional finding, a restapical ostitis is recognizable in tooth 24.



**Fig. 5:** Planning of the correct implant position according to the prosthetically harmonious implant-to-crown ratio and the required augmentation area.



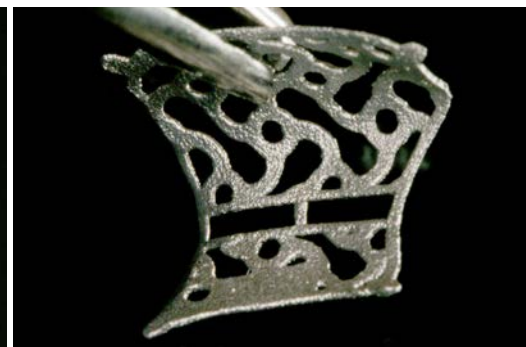
**Fig. 6:** 3D presentation of the planned mesh from lateral on the basis of the DICOM data set.



**Fig. 7:** The 3D representation from occlusal.



**Fig. 8:** 3D-printed titanium mesh (Yxoss CBR, ReOSS, Filderstadt) from lateral after sterilization.



**Fig. 9:** 3D-printed titanium mesh (Yxoss CBR, ReOSS, Filderstadt) from basal after sterilization.

to a perio-endo lesion with buccal fistula and putrid secretion. The results for circular pocket depth measurement were 6/10/10/10/12/4. The adjacent teeth were vital and not periodontally damaged. As a future restoration, the patient wanted a fixed, implant-prosthetic rehabilitation with a single-tooth crown. The patient rejected a conventional bridge restoration as a treatment alternative. The patient was in the professional dental cleaning recall program of the referring family dentist's office.

Atraumatic extraction on 06.02.2015 resulted in an interdental gap with three-dimensional; largely vertical, bone deficit (**Fig.2**). The patient was provided with a temporary restoration by her family dentist using a Walplast interim prosthesis. In situ, the soft tissue situation presented itself free of irritation and without scars (**Fig.3**).

### Planning

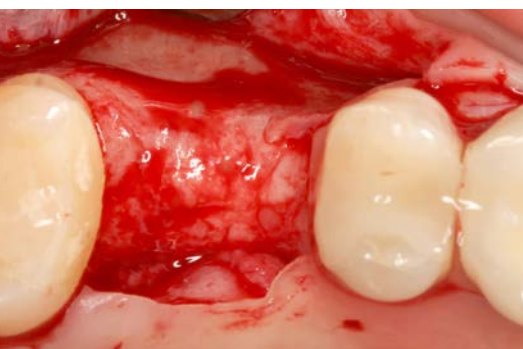
In addition to clinical diagnostics, digital volume tomography (DVT) was performed as the basis for further implantological therapy. The bone defect was also pronounced (**Fig.4**), so that transversal and vertical augmentation had to be planned. This was to be realized by means of an individually fabricated titanium mesh. A one-stage procedure was planned. Compensation of the volume deficit was to be purely additive in the direction of the oral cavity for the later prosthetic restoration; a sinus lift as well as a two-stage procedure were to be avoided (**Fig.5**). On the one hand, insertion of the customized mesh over the implant would lend itself to avoiding mechanical stress during bone healing. On the other hand, the required augmentation volume would be fixated. A slight overcontouring of the defect was also to be performed.

A digital 3D model of the defect was created with the DICOM data (Digital Imaging and Communications in Medicine) of the DVT. Based on the virtual model, a patient-specific mesh (Yxoss®, ReOSS) was designed (**Figs. 6 and 7**), which was printed in 3D after consultation with the clinician (**Figs. 8 and 9**).

In addition, a virtual and analog model analysis was performed. An analog set-up of tooth 26 was performed to determine the three-dimensional position of the implant. To this end, an X-ray splint was fabricated for precise virtual planning. This could later be used as a surgical splint.

### Surgical technique

A slightly palatally displaced incision was performed in region 25-28 under local anesthesia (Ultracain DS Forte, Hoechst, Germany). This was performed



**Fig. 10:** Defect situation in region 26 after mobilization of the mucoperiosteal flap – slight transversal deficit.



**Fig. 11:** The sterile titanium mesh for the area to be augmented was tried in situ.



**Fig. 12:** The implant bed was prepared to Ø 5.0 mm / L 9 mm with drills, followed by further preparation with convex bone condensers.



**Fig. 16:** Radiological documentation after insertion of the implant without sinus lift and with titanium mesh.



**Fig. 17:** The OPG taken after exposure and mesh removal, displays a stable vertical bone level without losses.



**Fig. 18:** Radiologically, the vertical bone level appears stable even after 2 years. The maxillary sinus is inconspicuous. Restapical ostitis at 24 has disappeared.

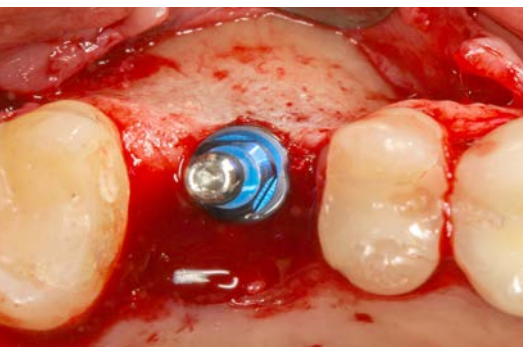
without mesial relief and with papillary preservation in the anterior region. Vestibular relief was performed in the retromolar region. After preparation of a mucoperiosteal flap, the three-dimensional defect was exposed (**Fig. 10**). The soft tissue volume was increased by periosteal slitting and tunneling in the vestibule. The fit of the mesh was checked intraoperatively (**Fig. 11**). Preparation of the implant bed (**Fig. 12**) was performed in accordance with the usual procedures using the positioning splint parallel to the adjacent teeth. The final apical height was prepared with bone condensers (SCREW-LINE osteotomy set/angulated-convex, CAMLOG), the bone quality was condensed and the predrilled bone compartment enlarged. The basal sinus floor was checked intraoperatively for completeness. The implant (CAMLOG SCREW-LINE, diameter 5/0, length 11) was inserted under the mesh in the ideal position for the implant prosthesis, which had been calculated in advance (**Fig. 13**). The implant could be inserted primary stable (bone quality 2 according to Adell) in spite of anchorage in the bone only being possible apically. Compensation of

the coronal deficit was performed with autologous bone and bone substitute material (Bio-Oss® 1-2 mm, Geistlich Pharma) at a mixing ratio of 1:1. Autologous bone was harvested from the retromolar region and the facial sinus wall using a Safescraper. The prepared mesh was filled with described augmentation material. It was then fixed to the remaining bone with an osteosynthesis screw (Medicon Mikro 1.2/7, Medicon) inserted mesio-bucally to the implant (**Figs. 14 and 15**). In addition, a collagen membrane was applied occlusally to the mesh (Bio-Gide®, Geistlich Pharma). The wound was closed tightly and tension-free over the titanium framework with single button and deep mattress sutures (5.0 Gore-tex suture, Gore). The postoperative X-ray showed the implant at the planned position with significant vertical bone gain (**Fig. 16**). Continuity of the basal maxillary sinus boundary was still preserved.

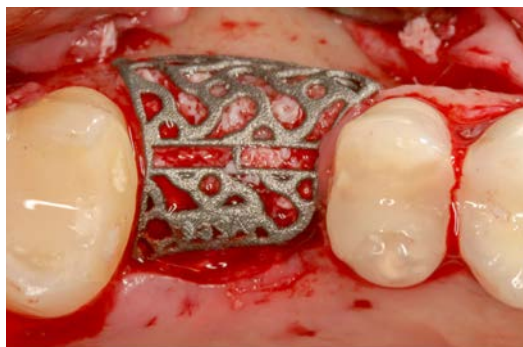
Postoperatively, the patient received instructions on prosthesis abstention and adequate oral hygiene. The sutures were removed after 10 days at clinically irritation-free wound conditions.

After a healing period of 4 months, explantation of the titanium mesh and exposure of the implant were performed in the second intervention. The same local anesthesia was used during the procedure and a minimally invasive ridge incision was made from 5 to 7 without relief. After preparation of a full flap, the fixation screw was removed and the mesh was separated at the coronal predetermined breaking point. The two individual parts could be removed with gentle extrusion movements using the raspator. The augmented bone volume displayed stable peri-implant dimensions and good vascularization. There were no signs of any inflammation. The cover screw on the implant was replaced by a wide-body gingiva former and tension-free wound closure was performed. The periosteal value (8.0) indicated stable bone integration. The sutures were removed one week later. Radiological control after 6 months revealed no vertical collapses and stable osseous conditions. The maxillary sinus continued to remain free of irritation (**Fig 17**).

The patient was then referred back to the family dentist for further prosthetic



**Fig. 13:** Insertion of the CAMLOG SCREW-LINE Implant (Ø 5.0, L 11 mm), in the pre-planned position. The upper, non-anchored convolutions of the implant are completely covered by augmentation material.



**Fig. 14:** The mesh is filled with augmentation material from autologous bone and bone substitute material (Bio Oss 1-2 mm, Geistlich Pharma) and inserted.



**Fig. 15:** Mesio-lateral view of the screw-retained titanium mesh with slightly compressed augmentation material in situ.



**Fig. 19:** Clinical situation after 2 years. The reconstructed area region 26 with prosthetic in situ from lateral. The peri-implant soft tissue is free of irritation.



**Fig. 20:** The occlusal view of the superstructure according to the prosthetic requirements.

treatment. The superstructure was integrated here on 5.9.2016.

## Results

Radiographic follow-up 26 months after surgery showed a stable augmented vertical bone level (**Fig. 18**). Similarly, peri-implant soft tissue conditions presented free of clinical irritation and scarring and without dehiscence areas. The superstructure met all prosthetic and esthetic requirements (**Figs. 19 and 20**).

## Discussion

The cosmetic and above all functional situation after tooth loss in region 26 was to be improved by closing the gap. A conventional prosthetic restoration (bridge 25-27) would have been an alternative treatment option to the performed implant insertion. In doing so, the abutment teeth 25 and 27, which did not require therapy, would have been affected by the preparation. In this case, implantation offered the option of closing the existing gap and preserving healthy tooth substance. The bone augmentation

required in this instance has proven to be successful for single tooth replacement. Predictable results can be achieved in terms of augmentation and implant survival [14]. Equal survival rates in native and augmented bone have been determined for an additive procedure using the onlay technique – similar to the present case [15]. Augmentation was performed using a CAD-CAM fabricated customized titanium mesh. Bone reconstructions using titanium meshes were first described by Boyne in 1969 [16]. Vertical and horizontal augmentation with titanium meshes is meanwhile regarded as being efficient [17, 18]; also particularly for the upper jaw [19]. This also applies to single-stage application in connection with implantations and augmentations as in this case [20]. Studies with customized titanium meshes have shown significant success in jaw reconstruction and in connection with implantations [5, 6, 21]. One study reported a 100% success rate for augmentations performed with customized titanium meshes [7]. Shortened intervention times were described, and this also applied to the present case. It was also possible to

individually adapt the intervention in advance through three-dimensional planning. Thus the mesh could be designed and printed specifically for the patient. Digital implantation was planned according to the prosthetic specifications and additional sinus lift surgery was avoided. The final outcome confirmed this planning and the use of the patient-specific mesh. Resorption that occurs after 6 months with the combined use of bone graft substitute and autologous bone in conjunction with a sinus lift was thus excluded [22]. Alternatively, conventional block augmentation from intra- and extraoral donor sites could have been performed. Increased co-morbidity for the patient would have been the consequence. The possibility of reduced revascularization and melting of part of the volume would also have existed [23]. The use of allogeneic blocks was rejected by both the clinician and the patient. Due to the greatly reduced bone at the implant site, other options for vertical bone augmentation such as distraction osteogenesis or interposition plasty were not considered.

The average vertical augmentation height for customized titanium meshes was given in the literature with a mean of  $6.5 \pm 1.7$  mm [7]. A systematic review [24] indicates a mean of  $3.7 \pm 1.4$  mm with regard to prefabricated meshes. The present case with a vertical augmentation of approx. 9 mm therefore clearly represents a limit as to what is surgically possible. From a conservative point of view, the pronounced vertical defect would have required a two-stage procedure. In the present case, the implant was inserted using an “adjusting screw” and a “modified tentpole technique” [25], which had a stabilizing effect on the augmentation. The limiting factor in such a pronounced augmentation is primarily the soft tissue management [7]. The development of dehiscences is the most common complication in the use of titanium meshes. In this case, the necessary gain in soft tissue was achieved by pure periosteal slitting and tunneling into the vestibule. If necessary, a free connective tissue graft could have been used simultaneously with the first intervention. The creation of a fixed gingival area around the implant was decisive. Subsequent peri-implant hygiene and thus long-term prognosis of the implant-prosthetic restoration were therefore to be improved. In general, vertical augmentation is liable to lead to complications [26]. In this case, the insertion of an additional occlusal collagen membrane inhibited competitive wound healing and thus the ingrowth of soft tissue cells. This may have contributed to sufficient revascularization of the augmentation material and to the long-term success. The bone level also proved to be stable after a 2-year follow-up and the peri-implant conditions were free of irritation.

Further research on the topic of customized bone regeneration in connection with implantations is desirable. Long-term and follow-up studies would be of particular interest. Topics for titanium meshes in the future will be different surface coatings to avoid dehiscences [27], resorbable materials and the ideal thickness of the mesh [28].

## Conclusion

Many implantations would not be possible without the use of bone augmentation. Three-dimensional defects remain a challenge in everyday implant surgery. In this case report it was shown that a complex defect could be reconstructed

by using a patient-specific titanium mesh. Using the digital surgical workflow, the clinician was involved in the design process, the implantation was planned virtually and the intervention time was shortened as a result.

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## THE NEW PROGRESSIVE-LINE IS COMING.

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PROGRESSIVE-LINE promises innovative design features for modern treatment protocols. The new implant line will be launched at the IDS 2019.

### PROGRESSIVE-LINE IS COMING: NEW IMPLANT BODY – PROVEN CONNECTION

CAMLOG already announced the development of a new implant line at the Oral Reconstruction Foundation's international congress in Rotterdam this spring. At the 32nd Congress of the DGI in Wiesbaden, interested parties had the opportunity to take a closer look at the new PROGRESSIVE-LINE implant and to discover its innovative features. Backed by major feedback from this event, the launch at the IDS 2019 will be yet another milestone for CAMLOG.

"The new implant line is based on the clinically proven and user-friendly internal connections of the CAMLOG and CONELOG Implants," says Christian Rähle, Head of Research and Development at CAMLOG. The outer geometry of the PROGRESSIVE-LINE Implant is consistently designed to achieve high primary stability, even in very soft bone. The apically strongly tapered implant body, the progressively expanding thread design as well as other design features provide safety in treatment concepts such as immediate implantation and restoration.

With an extremely efficient drilling protocol, the PROGRESSIVE-LINE meets the requirements of the market for reduced treatment times and immediate restoration protocols. "But it is not only in soft bone that the system demonstrates its virtues. Instead of using a tap, a surgical procedure with the absolutely novel Dense Bone Drill is envisaged for use in hard bone. This is just as easy to use as a conventional form drill and there is no need for time-consuming tapping and the often laborious search for the pre-cut thread during insertion of the implant",

says the developer. "The PROGRESSIVE-LINE System will be launched at the IDS 2019. Users from the pilot phase attest to the all-round talent's outstanding, user-friendly properties," states Rähle.

Interested parties are cordially invited to find out more about the new PROGRESSIVE-LINE at our stand at the IDS in Hall 11.3 Aisle A010/B019.

We look forward to welcoming you.





## STRONGER PRESENCE IN WESTERN EUROPE

### CAMLOG ACQUIRES MAJORITY STAKE IN PRO-CAM IMPLANTS B.V.

CAMLOG has acquired a majority stake in the exclusive Dutch distribution partner Pro-Cam Implants B.V. As a result, the Dutch market will be served by a direct sales organization and the presence in Western Europe will be strengthened.

The CAMLOG brand has a long and successful history in the Netherlands and has excellent prospects. "The merger will enable us to strengthen CAMLOG's market position in the Netherlands," says Dr. Eric Suter, Director Sales Western Europe. "In addition, customers will have access to a wide range of services, technical applications as well as numerous advanced training programs within the CAMLOG Group."

Company founder Mike van Rooijen will continue to run the business after

the acquisition and retain shares in the company. "With the necessary resources from CAMLOG we can accelerate our growth in the highly competitive dental

implant market and thereby secure significant market shares for the future," says van Rooijen.



Dr. Eric Suter  
Director Sales Western Europe



## ISY EXPERT DISCUSSION AT THE UNIVERSITY OF FRANKFURT AT THE ROUND TABLE OF THE DEUTSCHER ÄRZTEVERLAG

In September of this year, the editorial staff of the Deutscher Ärzteverlag invited iSy users to a discussion round on the



**"A blessing for immediate restoration in the esthetic field."**

Dr. Jan Klenke

topic of modern patient-friendly treatment concepts at the University of Frankfurt. Can time-saving protocols attract new patients? Doctors Maximilian Blume, Jan Klenke, who was linked live from Hamburg, Andreas Kraus and Conrad Kühnöl discussed patient wishes and therapy protocols for the future moderated by Prof. Dr. Dr. Dr. Robert Sader.

When asked "what patient expectations and wishes can an implant concept meet", the discussion quickly picked up momentum. Professor Dr. Dr. Dr. Robert Sader, Director of the Clinic for Oral and Maxillofacial Surgery at the Center for

Surgery of the Johann Wolfgang Goethe University Frankfurt am Main, moderated the discussion. He has been working with iSy for five years and sees the advantages in simple handling and shorter treatment times. At the beginning, the four iSy experts presented their treatment concepts in a presentation and jointly developed

patient- and practice-relevant features of the concept. Dr. Conrad Kühnöl, who runs a fully digitized practice in Dresden, was looking specifically for an implant system that would fit into his practice concept, "and that's iSy. With its components, it meets the requirements of a fully digital workflow." he added. He also focused on the cost efficiency of reconstruction with iSy based on a cost breakdown of an implantological single-tooth restoration compared to a conventional bridge restoration. He uses iSy as an all-round talent in all indications.

For Dr. Jan Klenke, Hamburg, iSy is "a blessing" for immediate restoration in the esthetic field. The factory pre-assembled implant bases can be used to fabricate highly esthetic temporary restorations and can be snapped on directly – an absolute unique selling point". The emergence profile is shaped in an elegant manner. As the implant base is not removed until the final prosthesis is inserted, the soft tissue at the implant shoulder is not



**"Fits perfectly into a digital practice"**

Dr. Conrad Kühnöl

manipulated. Klenke: "I am not aware of any system with such clean interior conditions."



**Moderator**  
Prof. Dr. Dr. Dr.  
Robert Sader



**"The range of indications can be extended and adapted to every other system."**  
Dr. Maximilian Blume

The iSy Implant System clearly demonstrates its advantages in transgingival healing, which experts believe is almost always possible, even in the case of smaller augmentations up to internal sinus lifts. The drilling protocol is a protocol for everyone, presupposing implant experience.

insertion up to restoration. "No multiple changes of abutments, you place the scan body on the adapter, snap the adapter onto the implant base, scan, and that's it. This perfect prosthetic workflow makes treatment much faster and easier." This is highly appreciated by his patients.

spectrum. As a true fan of locator restorations, "iSy with its aggressive thread is perfectly suited for this".



**"The workflow makes treatment faster and easier."**  
Dr. Andreas Kraus

Dr. Andreas Kraus, Peiting, was highly impressed by the snap-on scan adapter. He too, sees the advantage in that the implant base remains on the implant from

Transgingival healing significantly shortens surgical effort. But even more important is the fact that the iSy system makes prosthetic restoration clearer, more standardized and simpler. Because this streamlines the workflow, not only during the procedure, but also afterwards – and for almost all indications, from single-tooth restorations via locators to more complex tasks. Dr. Maximilian Blume, Mainz, was introduced to iSy at the University of Frankfurt and also integrated it into his practice concept. He places iSy on a par with other systems in terms of indication

**Conclusion of the experts**

The range of indications, however, is not increased with leaner, streamlined implant concepts, but it can reach significantly more patients. iSy is a modern implant system for the digital world with scientifically confirmed biological principles, "a next-generation implant", the round of experts concurred.

If you are interested, you can obtain the special issue of the focus publication of the Deutscher Ärzteverlag from your CAMLOG customer service upon request.



## NEW SALES BUILDING IN WIMSHEIM INAUGURATED

### CAMLOG EXPANDS ITS LOCATION IN GERMANY

Always planning one step ahead and keeping an eye on the future – that's what the CAMLOG Group stands for. This is also reflected in the new sales building, which was officially opened at the end of October in Wimsheim. The 5,000 square meter building offers plenty of space for further innovations and will create space for numerous jobs in the future.

#### The future looks set for growth

In 2019, CAMLOG celebrates its 20th birthday. Since its foundation in 1999, the company has developed at a rapid pace. Today it is one of the leading suppliers of complete systems and products for implant dentistry. ALTATEC GmbH, the exclusive manufacturer of the successful implant lines, and CAMLOG Vertriebs GmbH, which is responsible for sales in the DACH region, form a perfect symbiosis. The close cooperation of the teams as well as the geographical proximity contribute to the great success of the group of companies.

#### Even more firmly "rooted"

Next to the employees, international business partners, investors and representatives from politics and business had traveled to the inauguration ceremony of the sales building, which was built exactly opposite ALTATEC on the other side of the road. Stanley Bergman, Chairman and Chief Executive Officer of Henry Schein, Inc. the parent company of the CAMLOG Group, also took the time to attend the inaugural ceremony. He is particularly interested in emphasizing the "commitment to CAMLOG in the field of oral implant dentistry and for the Wimsheim region," said Stanley Bergman. "The new building is a symbol of our future and reflects Henry Schein's commitment to CAMLOG and the outstanding team. As a market leader, the company is dedicated to creating great solutions for its customers." For Dr. René Willi, Member and Delegate of the Board of Directors of CAMLOG Holding

AG, the focus is also on employees and customers: "The ultra-modern sales building is the ideal basis for further developing the CAMLOG portfolio and driving growth. It is a clear commitment to continue to place team spirit at the heart of our strategy. Quality and 'Made

in Germany' are in high demand. We will continue to invest to serve the different customer needs and market segments."



**Sustainability and service for even greater success**

To continue our role as one of the market leaders, it is today no longer sufficient to offer implants alone. Sustainability and service concepts are becoming

increasingly important. Just as much as excellent employees who develop into experts in their field. "The fact that our implants are so popular is also due to our excellent service and the extraordinary team spirit," explains Michael Ludwig, Managing Director of CAMLOG DACH.

"With their commitment, our employees are 100 percent there for our customers. They are your competent partner, exchange ideas with you at eye level and thrive for good cooperation with their know-how and services."

**Open communication and short channels**

In the very dynamic and complex dental industry, we need to maintain our spirit or indeed become more agile. With this in mind, the open-space concept in the new sales building deliberately creates an environment that promotes intensive communication among colleagues, makes processes more transparent and enables faster solutions. Different work zones have been set up for this purpose: Areas for individual work at the desk, teamwork in project zones for a creative retreat to a quiet, homely environment and zones for efficient interaction. The individual employees themselves decide where and how they wish to work. They can adapt their workplace to the task in hand. Maximum flexibility and short coordination channels will also contribute to greater efficiency and productivity in the team to promote the future growth and expansion of the company. Our international success also proves that we are on the right track: dentists from over 30 countries rely on dental implants "made in Wimsheim" for the benefit of their patients.





## LEADERSHIP: UNWRITTEN RULES IN TEAMS

In my previous article, I explained in detail how quickly discord can complicate everyday working life and what – sometimes lasting – consequences this can have, using the ten most common management mistakes. Disputes of any kind inevitably weaken teams. Due to the lack of interpersonal distance in particular, it is therefore all the more important in dental practices not to let conflicts arise in the first place, or to defuse them and to deal with them professionally.

Conflicts can be triggered by a wide variety of actions, such as changes within the team through expansion, takeover, separation, family planning, new hires, dismissal, and the transfer of tasks, responsibilities, and competences. Suddenly nothing is as it used to be – and the causes are not necessarily due to the new employees. System-inherent faults often only become apparent as a result.

From a constructivistic point of view, each team is a system of its own, whether it is a family, a practice or a large company. Every system needs clear limits to function smoothly. The larger the practice, the more important systemic interaction

becomes. A disregard of the systemic principles will inevitably lead to conflicts.

The systemic principles according to Insa Sparrer and Varga von Kibed describe five principles that build on each other:

### The principle of non-denial

The principle of non-denial is a superordinate principle: it concerns all subsequent principles. Here one needs to answer the question as to whether we are honestly facing the facts. If there is no communication about important facts in the long run, then mistrust and uncertainty inevitably arise. The associated loss of

trust hampers good cooperation and thus also the productivity of the company. If, for example, hierarchies are neglected by communicating across hierarchical levels, the consequence is that the excluded manager is devalued. This paralyzes their leadership competence. Everything we deny because it is unpleasant inevitably creates distance as the connection is interrupted. For example, if persons have been mobbed and this is not discussed, it may well be that a next employee is also mobbed – it is as if the company had a memory. What happens in the practice must be recognized in principle – as it is and as it was.

## FIRST PRINCIPLE

### The right to belong

The right to belong secures the limits of the system. And every system needs clear external limits. Who belongs where? Who needs to be informed? Who has which rights? This includes belonging to teams, departments and projects. Even all the staff who have ever been employed remain in the "memory of the practice" – with all their strengths and weaknesses. Likewise, the founders of a company always form a part, because the system owes them its existence. This secures the limits of the system. When refusing to belong, this can "hurt" not only persons but also values.

## SECOND PRINCIPLE

### Recognition of chronological order

Is long affiliation appreciated? Is the resulting experience appreciated accordingly? In spite of changed structures, the period of affiliation is a valuable asset. Potential for conflict arises quickly when long-standing employees feel they are at a disadvantage. The order in which managers and employees have to be informed, who is assigned to which activities, tasks and projects, or who is assigned competences and responsibilities, is important, as otherwise informal communication structures will quickly form which will be harmful to the company in the long term. But beware: those who have been in the system longer do not necessarily have more rights, but their affiliation must be valued. This ensures the opportunity for growth.

## THIRD PRINCIPLE

### Recognition of higher commitment for the greater good/hierarchies

The third systemic law strengthens the so-called "formation of the system's immune power". Do employees at the same level really have the same rights? Or are implicit hierarchies already emerging, or is a secret leadership emerging? Here the question needs to be clarified as to whether hierarchies are clearly adhered to and communicated. Every unclear hierarchy or diffuse structure weakens the company. The consequence is discontent and the working atmosphere suffers. Employees then look for their own position and often unconsciously overstep competences.

## FOURTH PRINCIPLE

### The precedence of higher performance and skills

This principle deals with the question of whether employees are encouraged and deployed according to their abilities. Is there appreciation and recognition of their special achievements or their explicit knowledge? Do employees receive corresponding activities and the commensurate remuneration based on their know-how? Performance and skills must be recognized and appreciated, otherwise motivation will decrease as will the willingness to contribute performance and knowledge. Only the recognition of skills enables real progress and strengthens competitiveness.

## FIFTH PRINCIPLE

### The principle of systemic balance

This principle is all about the balance between giving and taking. Special attention should be paid to the focus on systemic balancing principles. Those who constantly give and get little or nothing in return lose their motivation. If there is no permanent balance, discontent, excessive demands and demotivation will develop, which in turn leads to tension and a poisoned atmosphere. Those who take without balance fall into an economical debt – not an emotional debt.

### THE SYSTEMIC BALANCING PRINCIPLES:

- **Balance to the good should be enhanced**

For example, those who work well should also receive recognition.

- **Balance to the worse should be reduced**

For example, an error-friendly corporate culture promotes good performance. Employees who constantly live in fear of making mistakes will not be able to realize their potential.

- **Avoid an overly exact balance**

Petty offsetting generally prevents good relationships.

- **The “debtor” has a right to a reminder**

If a grievance is identified, communication concerning improvement suggestions is elementary.

- **The “creditor” becomes guilty towards the “debtor” if he refuses the reminder**

Keeping quiet about unpleasant events, makes you complicit!

- **The balance of the “debtor” must be made in the currency of the creditor**

Here it is necessary to clarify the question of how compensation is to be provided. If, for example, an employee has worked considerable overtime and the practice owner would like to reward his/her appreciation in the form of further training, it is quite possible that the employee may reject the offer. The supervisor could then well have a feeling of ingratitude and the employee a lack of understanding. This can lead to a hardening of positions.

As the five systemic principles build on the preceding ones, it quickly becomes clear that compliance with the sequence is essential.





### Example I

An employee (A) who helped set up the practice and who already has many years of dedicated service, is regularly given – also unwittingly due to the friendly relationship with the practice owner – attractive and effective tasks with which she can distinguish herself. A newer employee (B), with significantly greater expertise in some of these areas, is not asked. Employee B feels ignored and not valued; disharmony arises. In her opinion, whilst employee A is in the limelight, she feels degraded. Employee B's willingness to perform decreases; she is no longer keen to become involved. The relationship between B and A is now overshadowed by rejection. A has the feeling that she would quite naturally be entitled to these tasks, that the rejection refers to her as a person instead of to the situation and expresses irritation. The boss is perplexed and blames his team for the sensitivities and tells A and B to discuss this among themselves. The fact that this cannot be instrumental becomes clear when looking at the systemic principles: it is not the employees themselves who have the duty to intervene here, but the supervisor, as he was also the cause.

The fact is: long years of service in the practice do not entitle having greater rights, but must nevertheless be valued, as the system owes its existence in part to the employee. However, priority must be given to stronger performance, greater knowledge and special skills (4th principle). From a systemic point of view, the assignment of tasks in the team should have been based on the expertise and this decision should have been clearly formulated. If employee B is acknowledged according to her abilities, communication at eye level can be restored again. Other tasks which do not explicitly concern technical know-how should, however, of course be delegated to senior staff. Employee A would thus be acknowledged because of her long affiliation. Mutual respect and esteem can be restored.

### Example II

Employees A and B are very active in helping with the founding of the new practice, beyond the call of duty in fact. Years later a new employee (C) is hired. After a short time, C asks if she can be granted an expensive and very high quality training course, which will also enable her to achieve a higher position in the practice. The manager of the practice takes her employees A and B aside and asks if they have anything against this. Nobody speaks out and employee C is given the go-ahead. After a while it becomes apparent that absenteeism occurs more frequently. The new employee C is excluded from various things by employees A and B, a tendency to mobbing can be noticed.



From a systemic point of view, several principles were violated here: as employees A, B and C all have similar qualifications, the "right to recognition of the chronological order" as well as the "right to recognition of the higher commitment for the greater good" apply.

According to the understanding of employees A and B, they should have been first in line for further training due to their long affiliation and commitment. However, too piqued to ask, both remained silent. They felt this decision was an affront to themselves. This violated the principle of balance: the debtor has a right to a reminder. Employees A and B should have expressed their displeasure under four or six eyes. The felt offence turned into frustration and now deep trench warfare and work to rule are the result. This led to the unclear feeling that no

matter how hard one tries, this is neither seen nor rewarded. If the clinician had not informed her team personally, but left this up to employee C or even to chance, as soon as employees A and B would have heard about the sponsoring, even more violent reactions, such as giving notice, could not have been ruled out.

The solution from a systemic point of view would have been to ask employee C for time to make a decision and then to explain the request to employees A and B and to generally bring up the topic of further training and the associated career opportunities in the practice. It may well be that there are completely different preferences and interests that need to be explored. Once a decision has been made, the entire team can then discuss the topic freely. This can then lead to appreciation on all sides.

It should be the objective of every company to maintain the performance and satisfaction of its employees at a permanently high level. But good leadership is more than just avoiding mistakes, because compliance with the systemic principles plays an equally important role with regard to sensitivities within the team. Although there is no suitable systemic solution for every situation, knowledge of the systemic principles helps to deal professionally with foreseeable conflict potential and to keep disagreements to a minimum.

Having dealt with conflicts and leadership errors in the last two articles, I will now devote myself to the topic of motivation in the following issue of logo.



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## FRANKFURT AM MAIN

### THE AWESOME METROPOLIS FOR THE ADVANCED

The author of the following lines spent twelve exciting years of his life in the metropolis on the Main. In this respect, he is not a novice to Frankfurt and anything but neutral. But was Romeo when he made overtures to Julia?

Do you know what olives have in common with Frankfurt? Both are not for beginners – you either love or hate the Mediterranean fruits and the partially chaotic Federal Republic traffic and financial center. Here is a very selective visitor's guide to the Main metropolis, which makes no claim to completeness. But to honest emotions.

#### The wild side of life

Frankfurt is not a city that loves chaos, but gets down to business without frills as visitors notice straight away when walking from the main railway station towards Kaiserstrasse, Moselstrasse and Elbestrasse. Here is where the multicultural scene abounds: a colorful hustle and bustle of every kind, huge numbers of small shops and restaurants from all over the world. A definite must: order a remarkable sea bream for a lousy EUR 9 in Alim's fish snack bar; pay attention to the fish on your plate, not to the premises. If you are looking for hot investment tips, here you can meet scores of city bankers at lunchtime. At night it is better to stay clear of the train station district; this is where things turn really hardcore.

#### Hibbdebach is the home of money

North of the Main River, called Hibbdebach in Frankfurt, the rampant skyline clearly shows who is in the driving seat. Enjoy the fantastic view of Mainhattan's skyline – best after an extensive tour of the Museum Embankment – while visiting the location of the Frankfurt Rowing Club near the Friedensbrücke [bridge]. Traditional food, reasonable prices. Or a bit further up the river: from the Oosten harbor restaurant near the European Central Bank at Weseler Wharf: a magnificent view of downtown Frankfurt. Motto: things are often clearer from a distance.

#### Dribbdebach is the home of culture

South of the Main River, Dribbdebach, there is culture galore, full of museums on the banks of the Main, including 15 museums directly by the river. One should definitely visit the Städel Art Institute so as not to be considered a cultural ignoramus, it is simply known to all and sundry. There are many more sights worth seeing on this cultural mile, but this is best left to one's own spirit of adventure. We conclude by

saying: German Film Museum, Liebighaus and so on and so forth. In view of the long and varied Jewish history and culture in Frankfurt, a visit to the Jewish Museum in the Rothschild Palais Hibbdebach at Untermainkai 14/15 is particularly recommended.

#### Mercy, the Hessians are coming!

Anyone who wants to down a few glasses of cider will inevitably be drawn to Sachsenhausen: "Fraa Wirtin, noch en Bempel, gelle?" (Landlady, let's have another jug, right?) But not to the center of the amusement district, where on weekends hordes of boisterous young men and women from Vogelsberg and Wetterau act out their excesses, where the most horrible meat rolls are sold to tourists as rump steaks at fillet prices, and where you become aware of the transience of life when you look at the pretzels wilting away at table stands. If it has to be Äbbelwoi (cider), then best go to the 3 Steubern in Dreieichstraße. But hurry, the landlord is fast approaching ninety, and successors are not in sight. Flambéed Handkäs' (special cheese), the gentrified version of the original Hessian



speciality, is available from Schuch's in Alt Bornheim. And never say "Äppler" when you order a pint; you will immediately be brand marked as a Frankfurt greenhorn, which no one here will take seriously!



### Eating temple for the people

When eating in Frankfurt you must try Griebesoß (green sauce), which consists of nine fresh herbs. If you would like to prepare it yourself, go to the Kleinmarkthalle (food market) – Frankfurt's best restaurant according to Wolfram Siebeck. For the best sausage in town drop by Frau Schreiber's stand. You can enjoy a glass of wine on the balcony and watch from above where and how experienced Frankfurt housewives buy their food. Unforgotten the claim of the farmer who went over the top orthographically: "Today fresh Oberschienen" (meaning aubergines, but saying upper rails). This cultivation experiment was probably sponsored by the Frankfurt Transport Association.

### Who's who for shopping

Speaking of shopping: if you want to see where to shop when you reside in the Vordertaunus or in Bad Homburg – of course the hip new Henninger Tower with its apartments would also be an option – you should go to the Goethestraße. It's a safe bet you've never seen so many Aston-Martins, Porsche Panameras and Maranello creations per square meter parked illegally! No offence intended: but what's on offer here easily keeps up with 5th Avenue and Galeries Lafayette. As do the budgets

of the Arab and Chinese customers. For those more at home in the middle income segment the Zeil is popular for shopping; e.g. in My Zeil with fashion, technology and all kinds of frills that nobody needs but everyone wants. Halfway between the Hauptwache and Konstablerwache there used to be the Schneider's department store, which became famous when a certain Gudrun Ensslin and Andreas Baader set fire to it on 2 April 1968. No doubt you have heard of these two.

### Dialectics of enlightenment

However, this has little to do with the legend of the political rockers Bonnie & Clyde and their acts of arson, but rather with the history of Critical Theory, which can still be experienced today in the West of Frankfurt. The main protagonists of this school of thought, which was created in the Institute for Social Research diagonally opposite the palaeontologically brilliant Senckenberg Nature Research Society, were Messrs Adorno & Horkheimer (called the Marx Brothers by the rebellious Frankfurt APO) [extra-parliamentary opposition). On the old Bockenheimer campus, in the main building of the Goethe University, you can still have a look around the legendary lecture hall VI – where Theodor W. Adorno once lectured and developed his theory, which brought a lot of explosive potential to society in 1968. A talented Adorno pupil named Hans-Jürgen Krahl, chief agitator of the Frankfurt Socialist German Student Union, whom they called the Robespierre of Bockenheimer because of his demagogic talent for speech, also attended lectures here. This hothead, with whom even Rudi Dutschke could not compare rhetorically despite his linguistic acumen, was instrumental in instigating the life tragedy of his academic teacher Adorno, who summed up the fatal collision of the Critical Theory with the student movement in the words: "I have set up a theoretical model of thought. How could I have anticipated that people would want to apply this theory with Molotov cocktails?"

### Home of the homeless

On the Bockenheimer Warte an anarchistic distillery called Doctor Fleet has been in existence since the early 70s, the meeting place of a weird Lost Generation. After a change of tenant in September 2012, the Frankfurter Rundschau newspaper wrote

the following about this rather different mixture: "The old figures who made Doctor Flotte so unique are once again clustering the bar. Adorno and Averno have always battled for supremacy here. Doctor Flotte is a stronghold of the spirit, professional boozers watering hole and soccer pub for Eintracht fans in one. This is where the Titanic editorial staff took refuge as soon as there was the threat of work in the editorial offices in nearby Sophienstraße. Here thousands of students drunk away their educational grants before being chased into the IG Farben cluster of excellency. Here the Eintracht celebrated promotion and suffered relegation." The smoking ban imposed by the authorities in public bars some time ago was met with mockery and ridicule by Flotte's bar staff and consistently ignored – people are still puffing away merrily here today!

In July 1975, as a young student, the author of this article sat in Doctor Flotte and annihilated a number of refreshing beers during heated scientific debates with fellow students. Sunshine had spilled into the pub and he had just come to the conclusion that the world could be a passable place after all despite all its perils. Suddenly he felt something stroking tenderly around his legs and purring its way softly into his life. In the bizarre dive called Doctor Flotte, on the Bockenheimer Warte in Frankfurt am Main, the old Free Imperial City, which leaves plenty of room for a lot of different things, the still somewhat shy Mr. Studiosus bent down to look under the rickety sewing machine table, which had been converted into a pub table, and looked into the sparkling eyes of a proud wild cat, who looked at him friendly, said "meow" – and lay down on his foot to warm him up. And when he gently asked her: "What's your name, my pretty one?" she thought for a moment, raised her head self-confidently and purred enticingly: "Frankfurt, my boy – my name is Frankfurt am Main."



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