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6TH INTERNATIONAL CAMLOG CONGRESS IN KRAKOW

6TH INTERNATIONAL

CAMLOG CONGRESS

JUNE 9–11, 2016

KRAKOW, POLAND

Dear Reader

The 6th International CAMLOG Congress will take place from June 9 to 11, 2016, in Krakow, Poland. "Why in Krakow – aren't there more attractive locations for a congress?" I would have been asking myself the same question a few years ago. Since then I have met many people who have visited Krakow and spoken of the city with enthusiasm. When the managing director of our Polish office showed me pictures of the International Conferences and Entertainment (ICE) building that was under construction, we decided to visit Krakow in the fall of 2014 after its opening. We were totally enthused by the brand-new ICE with its fascinating architecture, the outstanding acoustics, and the modern stage technology.

I can confirm that the city of Krakow is also well worth a visit. Krakow is the second largest city in Poland and has traditionally been one of the major centers of Polish scientific, cultural, and artistic life. The city is famous for its numerous cultural landmarks and is the former royal capital of Poland.

Under the motto "Tackling everyday challenges," we will be concentrating on the basic principles in implant dentistry in the daily practice. At the same time, however, we will also be looking at what the current state-of-the-art science brings in this context.

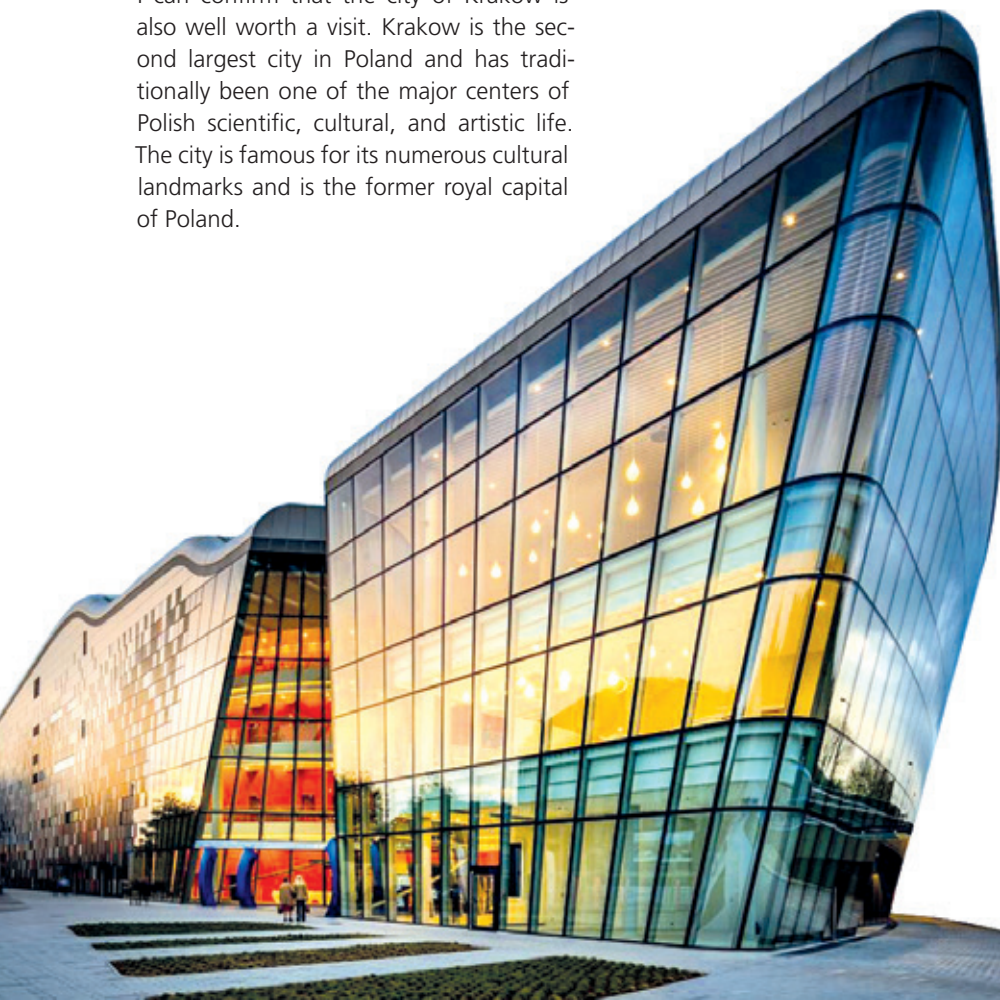
Personally, I am particularly looking forward to the Digital Dentistry Pre-Congress on Thursday, June 9, 2016. The importance of digital technologies in both the clinic and the laboratory is undisputed. There is a Chinese saying: "Fail to take care of the future and you will mourn the present." So take the opportunity to learn more about this fascinating subject first hand from top experts in dentistry and dental technology. For those participants

who prefer learning in small groups and completing practical exercises, we are offering a number of different workshops on the same day.

Now, life is not just about working and learning, but also about maintaining and celebrating friendships. Join once again CAMLOG's legendary party which this time will take place in the old tram depot in the Kazimierz district. You can find more information about the program for the 6th International CAMLOG Congress as well as read about scientific studies and much more on the following pages.

I look forward to personally welcoming all readers of logo in Krakow.

Dr. Alex Schär
CAMLOG Foundation
Member of the Foundation Board



Discover Krakow.

Here you'll find the trailer:



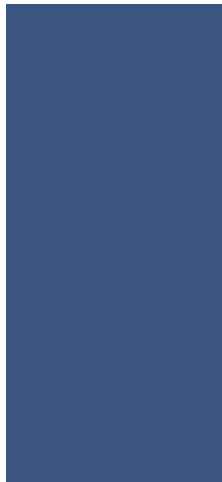


6TH INTERNATIONAL

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TACKLING EVERYDAY CHALLENGES

At the 6th International CAMLOG Congress we will focus on scientifically sound and practical solutions. Experience our practical hands-on workshops, an innovative pre-congress on digitalization and exciting lectures. Participate in interactive discussions and meet internationally renowned speakers in the Network Lounge in a relaxed atmosphere. The attractive ICE Congress center in Krakow offers the perfect platform. Krakow is a lively and fascinating UNESCO World Heritage Site and enthusiastic in many ways. Other congress highlights are the Special Speaker, the legendary CAMLOG Party and the attractive partner programs.

Register early – we look forward to meeting you!





6TH INTERNATIONAL CAMLOG CONGRESS

JUNE 9-11, 2016 IN KRAKOW

The preparations for the sixth International CAMLOG Congress are in full swing. We have again managed to find a very attractive venue for the congress. After Lucerne and Valencia, we will meet up in Krakow, the former royal capital of Poland. The lively historic district is the perfect complement to the most modern conference building in Europe, the ICE.

Tried and true and something new on Thursday

On Thursday before the two days of the congress, we can offer you a number of attractive options. As was the case with recent congresses, on this day our tried and true, practical workshops are held and usually quickly booked out. Four full-day and two half-day workshops will cover current topics such as 3D planning, bone augmentation, sinus lift, and suture techniques in small groups, all presented by expert speakers with a focus on practical aspects.

A Digital Dentistry Pre-congress will be held in parallel to the workshops. During this full-day event, top experts in dentistry and dental technology will discuss the interdisciplinary workflow and reveal exciting prospects from across the entire range of digital options. We can strongly recommend that those interested have a look at the detailed program and book the day now.

Tackling everyday challenges

The scientific committee of the CAMLOG Foundation with its thirteen renowned ex-

perts has prepared a varied program. Under the chairmanship of the two congress presidents Prof. Frank Schwarz and Prof. Piotr Majewski, some 50 international speakers, all renowned in their research, teaching, clinical, and practical fields, will present a representative cross-section of practical aspects of implant dentistry in routine use. At the same time, an eye will be cast over the background science.

The Friday launches with a block with a completely practical focus. Issues related to "Basic principles in treatment planning, surgery, and prosthetics" will be examined in depth by three speakers before continuing on to the esthetic zone. "How do I manage the esthetic zone?" This question will be answered by three specialists in their field with presentations on soft tissue management, the correct choice of materials, and the right timing.

Lunch is followed by an exciting topic: "How do I handle the lateral area?" A presentation on clinical indications for short implants will certainly keep the audience enthralled as will the other two presentations on long-term success rates and bone transplants.

The conclusion to the first day on implant dentistry forms a block with an interactive team discussion. Successful teams will present their clinical concepts and the audience is welcome to ask questions at any time. Questions about digital workflows or the esthetically critical zone can be sent directly from iPads or iPhones to the speakers. And speaking of interaction ...

A high point to end on

In recent years there have been significant advances made in 3D facial modeling to create special effects in the film industry. The technology has enormous potential for use in medicine. Our guest speaker Prof. Markus Gross will give us an overview of 20 years of work on digital human faces. Markus Gross is Professor of Computer Sciences at the ETH Zurich, winner of numerous prestigious international awards, and is Director of Disney Research. His presentation "The virtual man" will no doubt enthral the audience with its futuristic images and technologies. We are really excited about this highlight in Krakow.



Hard Rock CAMLOG

After the future it's back to the 1970s – the wild times of Deep Purple, Led Zeppelin, AC/DC, and many other bands that are just as popular today and have made history. The Hard Rock CAMLOG party will be exactly what its name promises: it will rock. We guarantee lots of live music with guitar and drum solos in an authentic hard rock atmosphere. For those participants who like things a little quieter, we already have a plan. Of course, we will once again have plenty of surprises for you to make sure this is one party that will be long remembered.

Tackling everyday challenges – part 2

The Saturday will focus on the science right from the beginning. Seven short presentations on current research projects will be followed by a session on the transmucosal region. Current issues such as the preservation of the crestal bone level, peri-implantitis, and connective tissue grafts are explained by renowned experts. After lunch, the winners of the CAMLOG Foundation Research Awards will be chosen, followed by the climax of the two-day congress.

The debate!

Using case studies, speakers will highlight current controversial topics from different perspectives. The audience will be asked to play an important role here. Questions can be asked of the speakers or statements made at any time. "Should an implant be preserved in a case of peri-implantitis or should I remove it?" and "Which implant-abutment connection is better: Conical or parallel walls?" Whether these questions can be answered after the panel discussions remains to be seen.

Interaction and networking

Along with an outstanding scientific program, the opportunity for personal contributions and communication. Using the interactive congress app, participants can access lots of useful information and functions even before the congress has started. And the app will also play an important role at the congress itself. The app allows participants to get in touch with specific speakers. In the networking lounge our speakers will be available for you at specific times for discussions. In the Speaker's Corner in the foyer participants in the poster competition will have a platform to present their posters to those interested. We are looking forward to lively exchanges.

Cultural sideevents

Krakow offers a great variety of cultural highlights. In the historic district, which escaped World War II unscathed, there are more than 100 churches, beautiful buildings, and historical monuments. Visit the Jewish quarter in Kazimierz, explore Krakow on the retro tram, try your hand at some graphic arts, marvel at one of the largest salt mines in the world, or travel back in time to the Communist era - this and

many other options in our congress social program are available for you or your travel partner. We urge you to extend your stay in Krakow and take time to explore this beautiful city.

Fair prices

CAMLOG customers have long been familiar with our fair prices for our quality products and events. The fees we charge for attending the 6th International CAMLOG Congress are moderate. With early registration by the end of February 2016, the congress fees are only €490. Students, research assistants, and dental technical staff pay €250. For the same price, you can also take part in the Digital Dentistry Pre-Congress on Thursday. And you can even benefit twice: When you book for the pre-congress and the main congress, you receive a €50 discount on the total price. So, it's worth your while to not just book early but to book all three congress days at the same time.

Registration

You can register at any time on our homepage where you can also find all the necessary information. The QR code provides direct access to the congress website. We look forward to welcoming you.



www.camlogcongress.com

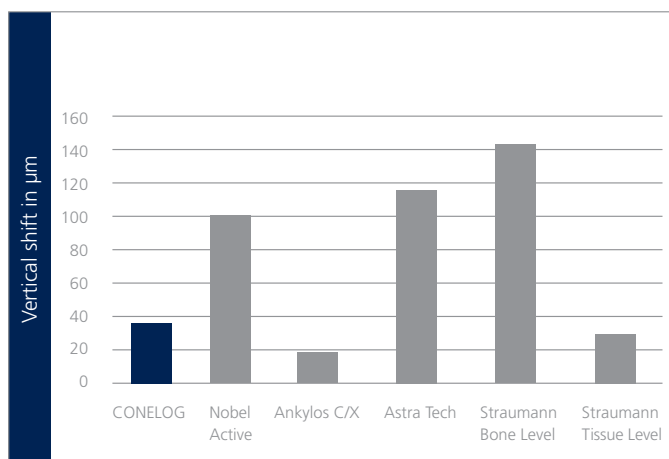


Fig. 1: Spread of the vertical displacement (image taken from Semper Hogg et al. (2015)).

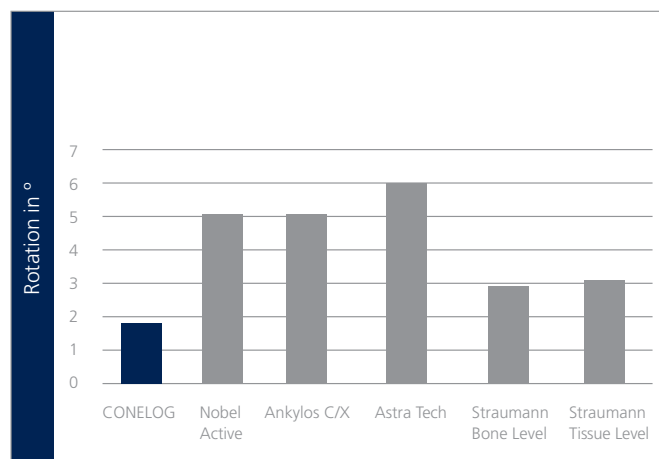


Fig. 2: Spread of the rotation (image taken from Semper Hogg et al. (2015)).



THE INFLUENCE OF THE TIGHTENING TORQUE OF CONICAL IMPLANT-ABUTMENT CONNECTIONS ON THE POSITIONAL STABILITY OF THE ABUTMENT

Semper Hogg W, Zulauf K, Mehrhof J, Nelson K. (from the original publication in English)

How does repeatedly tightening the abutment screw using a system-specific torque after repositioning of the abutment affect the positional stability of the implant-abutment connection? A new study investigated this question using six different implant systems.

Introduction

When implant components are repeatedly tightened hand-tight, this produces positional changes in the abutment [1, 2]. These changes should be as small as possible for implants with a conical inner connection if the abutment screw is tightened with a system-specific torque during all intermediate prosthetic steps before insertion of the final suprastructure [3, 4]. The research group headed by Katja Nelson evaluated how repeatedly repositioning the abutment and tightening the abutment screw using a system-specific torque affected the rotation, vertical displacement, and canting of the abutment using an established experimental setup [1, 2].

Materials and method

Six commercial dental implant systems with conical implant-abutment connections and different cone angles (S1: Conelog 7.5°, S2: Nobel Active 12°, S3: Ankylos C/X 5.7°, S4: Astra Tech 11°,

S5: Straumann Bone Level 15°, S6: Straumann Tissue Level 8°) were fixed in a pre-fabricated metal block at different angles to the longitudinal axis. Two testers disassembled and reassembled the abutment test body complexes twenty times each. After tightening with a system-specific torque and system-specific torque wrench, the position of the test body was measured after each test using a coordinate measuring machine and the change in the height, the rotation, and the canting of the abutment were determined.

Results

A change in the abutment position was identified for all three parameters measured (**Fig. 1 to 3, Tab. 1**). The implant system evaluated had a significant effect on the results ($p=0.001$, $p<0.001$, $p=0.006$).

The values for the vertical displacement ranged as far as 144 µm (S5). Rotational deviations of up to 6.02° (S4) were

observed. The smallest deviations were seen for S1, S5, and S6. The canting moments of S4 had the largest spread.

Conclusion

It is also not possible to achieve positional stability of the abutment by repeatedly tightening the abutment screw with a system-specific torque. Changes in the position of the abutment during the restoration process lead to the prosthetic suprastructure not fitting.

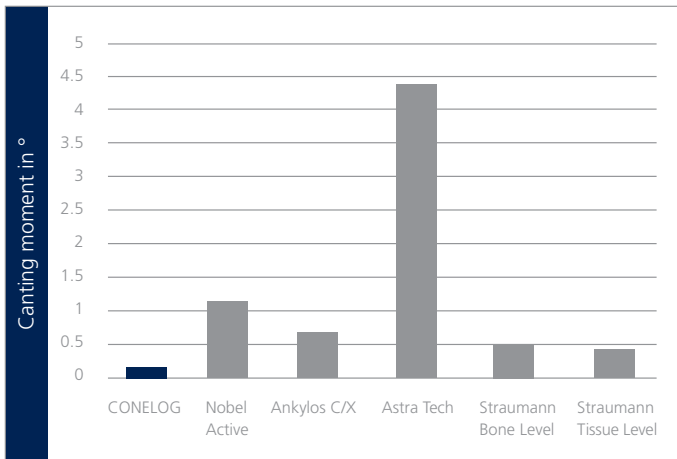


Fig. 3: Spread of the canting (image taken from Semper Hogg et al. (2015)).

Dr. Wiebke Semper Hogg

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		S1	S2	S3	S4	S5	S6
Vertical displacements	(1)	3 µm	6 µm	2 µm	14 µm	20 µm	4 µm
	(2)	(3 µm : 4 µm)	(5 µm; 7 µm)	(2 µm; 3 µm)	(9 µm; 18 µm)	(14 µm; 30 µm)	(3 µm; 5 µm)
	(3)	*vs. S2, S3, S4, S5	*vs. S1, S3, S5, S6	*vs. S1, S2, S4, S5, S6	*vs. S1, S3, S6	*vs. S1, S2, S3, S6	*vs. S2, S3, S4, S5
Rotation	(1)	0.40°	0.72°	0.74°	0.84°	0.47°	0.12°
	(2)	(0.30°, 0.54°)	(0.39°; 0.98°)	(0.46°; 0.93°)	(0.61°; 1.10°)	(0.38°; 0.70°)	(0.08°; 0.44°)
	(3)	*vs. S2, S3, S4	*vs. S1, S4, S6	*vs. S1, S6	*vs. S1, S2, S5, S6	*vs. S4	*vs. S2, S3, S4
Canting moments	(1)	0.02°	0.10°	0.05°	0.07°	0.09°	0.04°
	(2)	(0.02°; 0.03°)	(0.07°; 0.17°)	(0.02°; 0.09°)	(0.04°; 0.12°)	(0.05°; 0.12°)	(0.03°; 0.08°)
	(3)	*vs. S2, S4, S5, S6	*vs. S1, S3, S6	*vs. S2	*vs. S1	*vs. S1	*vs. S1, S2

Tab. 1: Vertical displacement, rotation, and canting moment for the six implant systems evaluated. S1: Conelog, S2: Nobel Active, S3: Ankylos C/X, S4: Astra Tech, S5: Straumann Bone Level, S6: Straumann Tissue Level. (1): Median – (2): (25% and 75% percentiles) – (3): * p < 0.05 versus other implant system.

Original publication in English:

Semper Hogg W, Zulauf K, Merhof J, Nelson K. The influence of torque tightening on the position stability of the abutment in conical implant-abutment connections. *Int J Prosthodont* 2015;28(5):538-541

LITERATURE

[1] Semper W, Heberer S, Mehrhof J, Schink T, Nelson K. Effects of repeated manual disassembly and reassembly on the positional stability of various implant-abutment complexes: an experimental study. *Int J Oral Maxillofac Implants*. 2010 Jan-Feb;25(1):86-94.

[2] Semper-Hogg W, Kraft S, Stiller S, Mehrhof J, Nelson K. Analytical and experimental position stability of the abutment in different dental implant systems with a conical implant-abutment connection. *Clin Oral Invest*. 2013 Apr;17(3):1017-23.

[3] Kim KS, Lim YJ, Kim MJ, Kwon HB, Yang JH, Lee JB, Yim SH. Variation in the total lengths of abutment/implant assemblies generated with a function of applied tightening torque in external and internal implant-abutment connection. *Clin Oral Implants Res*. 2011 Aug;22(8):834-9.

[4] Lee JH, Kim DG, Park CJ, Cho LR. Axial displacements in external and internal implant-abutment connection. *Clin Oral Implants Res*. 2014 Feb;25(2):e83-9.

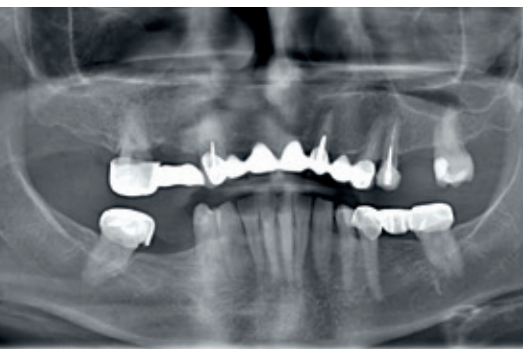


Fig. 1: The radiograph illustrates the current oral situation.



Fig. 2: The upper jaw bridge had jutting crown margins.



Fig. 3: The bridge was broken in several places and the ceramic veneers were sheared off.



A TOTAL CONCEPT FOR TREATING AN UPPER JAW WITH INDICATION CLASS IIIa

Dr. Albert Holler, Arzberg, Dr. Marc-André Grundl, MDT Kurt Illing, both Marktredwitz

The indications and the success rates for implant-supported restorations are far greater today than at the start of implant development (1960 to 1980). Nowadays implant-supported restorations are a scientifically established and essential part of modern oral treatment concepts. According to the scientific gold standard, in cases of complete edentulism in the upper jaw eight implants are usually sufficient for a high-quality fixed reconstruction [1]. Our patients often want fixed and esthetic restorations instead of removable restorations or complete dentures. Rehabilitation of an edentulous upper jaw with a cemented zirconium bridge on eight DEDICAM titanium abutments after 3D planning and template-guided implant insertion is described below.

In complex clinical situations, good communication between the treatment team, the dental technician, and the patient is essential for the long-term stability of a rehabilitation. A thorough preliminary examination and carefully determining the indication help to avoid any failures. It is important here that before the treatment starts all members of the team are focused on achieving the best possible functional design of the prosthesis, respecting the wishes of the patient in terms of esthetics, and promptly identifying any complications or clinical or technical limitations. Using CAD/CAM technology enables precisely fabricated restorations to be constructed from biocompatible materials such as high-performance polymers, titanium, or zirconium oxide. Fabricating these restorations using an analog process is often not

possible or requires excessive effort. The precision of a CAM-prepared restoration is no longer an issue.

Findings and planning of the complete concept

In March 2013 a complete surgical and prosthetic concept was prepared for the 56-year-old patient. The bridge in the patient's upper jaw was broken in several places. Radiographs revealed that the abutment teeth were periodontally compromised and could not be retained apart from the terminal molar in the second quadrant. The bridge from 35 to 37 required rejuvenation and the edentulous space in the fourth quadrant needed to be closed up (**Fig. 1 to 4**). So that a comprehensive plan could be prepared, panoramic radiographic images of the current oral situation

were prepared for analysis. An impression was taken of both jaws to create models of the situation. So that the models could be articulated relative to the skull, a facebow was inserted. The periodontal screening was normal. A functional analysis did not reveal any signs of craniomandibular dysfunction.

Because the patient did not want a full prosthesis, we presented her with two prosthetic restoration options. One was a removable telescopic bridge that would be realized with five implants and a telescopic crown on tooth 27 in the upper jaw, or alternatively a fixed cemented bridge restoration supported on eight implants. To restore optimal chewing function, two bridges on natural teeth in the lateral lower jaw were suggested. After explaining the differences between the various



Fig. 4: To enable optimal chewing function, the lower jaw bridge had to be replaced on the left and the gap in the fourth quadrant needed to be closed.



Fig. 5: The temporary prosthesis was inserted after the extraction of the abutment teeth in the upper jaw.

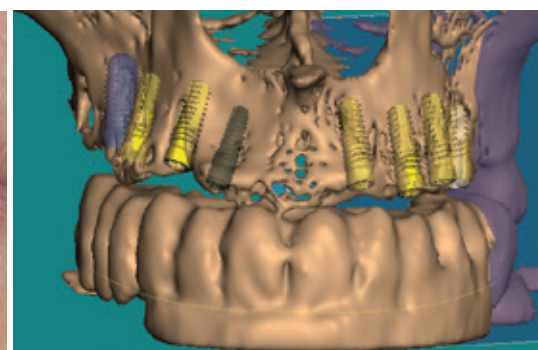


Fig. 6: After the extraction sockets had healed, the virtual implant planning was carried out.

treatment options to the patient, she opted for a fixed reconstruction. Using a set-up on the models, we prepared the following integrated treatment plan in close consultation with the surgeon, the dental technician, and the patient [2, 3]:

- Extraction of the non-retainable abutment teeth in the upper jaw
- Removable prosthesis in the upper jaw during the healing phase
- 3D implant diagnostics
- Virtual implant planning
- Preparation of the surgical template for the implant insertion
- Implant surgery
- Implant exposure, soft tissue management and contouring with a direct screw-retained plastic bridge
- Implant impression taking
- Insertion of the temporary restoration and fine-tuning of the esthetics
- Preparation in the lower jaw including taking an impression of the natural teeth
- Fabrication of zirconia bridges on eight individual CAD/CAM titanium abutments
- Try-in of the upper and lower jaw restoration to check the function and esthetics
- Insertion of the final restoration

Our dental technician used the set-up as a guide to fabricate a prosthesis for the temporary restoration for the extraction appointment in October 2013. After querying the general health of the patient and examining the current oral situation, we carried out the atraumatic extraction of all non-retainable abutment teeth in the upper jaw apart from tooth 27 in our clinic. We were particularly cautious when extracting the anterior teeth so that we could preserve the very thin vestibular bone lamella as completely as possible. Because we planned to insert the implants about

four months later, we allowed bleeding in the extraction sockets. The blood clots favor the migration of growth cells from the surrounding vessels so that about eight weeks after the extraction the sockets were filled with freshly formed cancellous bone and closed over with stable epithelial tissue [4]. This bone will then undergo various remodeling processes over the following months. After the primary wound closure, we fitted the temporary prosthesis. It prevents the accumulation of traces of food in the extraction sockets (**Fig. 5**).

Virtual implant planning

In the lateral area of the upper jaw, certain criteria must be considered for esthetic restoration using bridges. Special attention must be placed on the soft tissue situation here. So that saliva bubbles do not form in the interdental spaces or to prevent traces of food being trapped here, implants should be designed to satisfy the prosthetic requirements and positioned with optimal distance between them. They not only stabilize the bone but also support the surrounding soft tissue. Thanks to the pontic element of the bridge, pseudo-papillae can be reconstructed, creating a natural transition from the ceramic restoration to the soft tissue. CAD/CAM technologies offer us a number of options to satisfactorily take these conditions into account in many cases. For optimal planning of the restoration and positioning of the implants, the dental technician fabricated a wax try-in without the vestibular gingival section in the anterior area. Using this set-up, we checked the esthetics, clarified the length of the anterior teeth, and defined the occlusal planes. The temporary restoration was relined and adjusted to the new occlusal position.

Using the set-up, a radiology template was prepared and the patient was transferred to the radiologist for a CT scan. During the CT scan, the patient wore a restoration prepared from radiopaque material with an anatomical emergence profile that showed the desired subsequent prosthetic situation in the CT images. Using the med 3D software and together with specialists from the laboratory, we evaluated the images and defined the optimal implant positions and lengths. We planned four implants in the first quadrant in the lateral area regio 14, 15, each of $\varnothing 3.8 \text{ mm} \times 11 \text{ mm}$ length and $\varnothing 3.3 \text{ mm} \times 13 \text{ mm}$ long implant in regio 12, in regio 16 $\varnothing 5.0 \text{ mm} \times 11 \text{ mm}$. In the second quadrant two implants are inserted in the lateral area regio 24 ($\varnothing 3.8 \text{ mm} \times 11 \text{ mm}$ length) and 26 ($\varnothing 3.8 \text{ mm} \times 9 \text{ mm}$ length) as well as two implants in regio 22 and 23 (each with $\varnothing 3.8 \text{ mm} \times 11 \text{ mm}$ length) (**Fig. 6**). Using the data acquired, the planning specialists fabricated a surgical template with the two-part CAMLOG CT-tubes for implantation.

In February 2014 the implantation was performed in the oral surgery clinic of Dr. Grundl. After induction of local anesthesia, the surgeon exposed the jaw bone in the surgical field. When exposing the bone, ensure that the drilling template can be positioned stably. He made alveolar ridge incisions oriented slightly palatal (inside the linea alba) that end distally at regio 16 and around tooth 27 with paramedial curve-shaped relief incisions. To minimize the risk of absorption in the anterior esthetic zone, the surgeon left a central ridge of about one centimeter of soft tissue, a technique introduced by S. Schmidinger in 1981 in Vienna (**Fig. 7 and 8**) [5]. The minimal bleeding tendency and the stability of the wound margin with a crestal incision are beneficial for the rest of the operation and good wound healing.

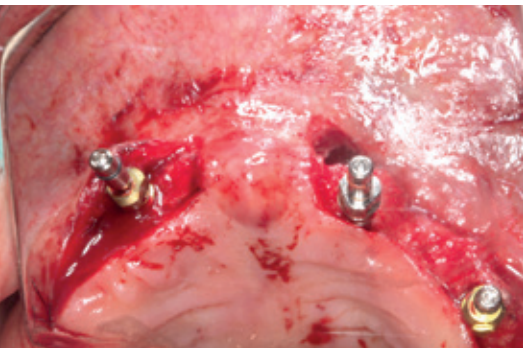


Fig. 7: Using a crestal incision and subsequent flap preparation, the jaw bone was exposed.

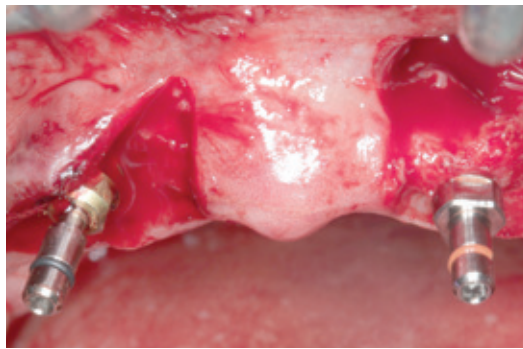


Fig. 8: Leaving a central ridge provides support for the temporary prosthesis and simplifies the precise repositioning of the soft tissue.

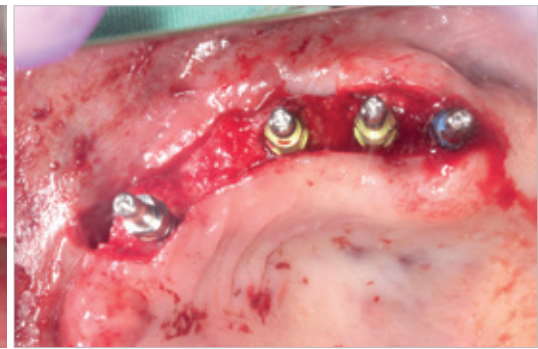


Fig. 9: Backward planning is a prerequisite for prosthetically correct positioning of the implants.



Fig. 13: The wound margins were precisely adapted and the soft tissue was tightly closed up using simple interrupted sutures and mattress sutures.

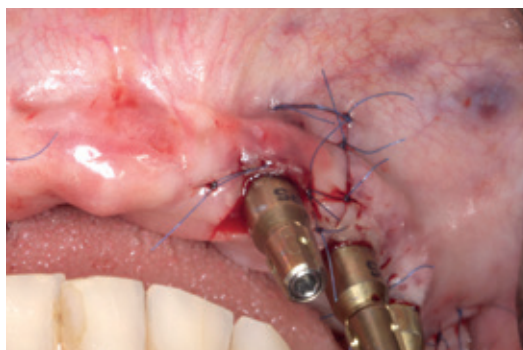


Fig. 14: The implants were exposed with a simple stab incision and the mucosa in regio 22 was widened with a roll flap.

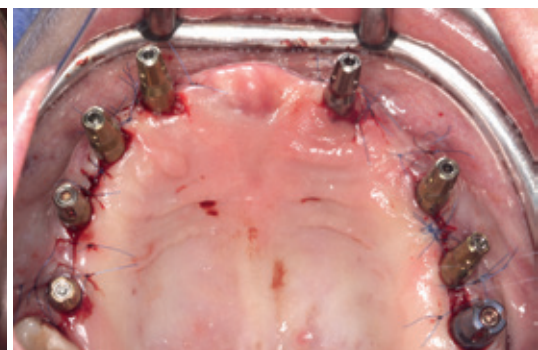


Fig. 15: To produce a CAD/CAM-fabricated screw-retained plastic bridge, immediately after exposure the abutments were attached to take an indirect impression.

Full thickness mucoperiosteal flaps were then prepared. Using the surgical template, the surgeon prepared the implant bed corresponding to the lengths and diameters of the implants and inserted the CAMLOG® SCREW-LINE implants in accordance with the surgical protocol (**Fig. 9**). To avoid a sinus lift, a short implant (length 9 mm, diameter 3.8 mm) was inserted in regio 26 (**Fig. 10**) [6]. An insertion post was screwed in and the implant was covered with the cover screws. The flap was mobilized using a periosteal slit. In regio 23 the surgeon augmented the buccal bone lamella with a mixture of autologous bone chips and an alloplastic bone graft material (easy-graft™ CRYSTAL). Smaller bone defects in the surgical field were evened out using autologous bone chips harvested from the threads of the drill (**Fig. 11**). To encourage wound healing, the entire implantation area in the upper jaw was covered with PRF membranes (**Fig. 12**). Over a period of seven days, the membrane releases the integrated growth factors and accelerates and improves wound healing [7]. The matrix obtained by concentrating the patient's own platelets is a cost-effective preparation and is easily processed

thanks to the inherent consistency. The soft tissue was then sutured without tension using mattress and simple interrupted sutures (**Fig. 13**). The temporary prosthesis was well supported over the gingiva, the terminal tooth 27, and the stable ridge around the incisive papilla. After eight days we were able to remove the sutures. Once the soft tissue had healed, we relined the temporary prosthesis with plastic a few days later.

Exposure and contouring a natural emergence profile

The patient attended our clinic at the start of June 2014 for prosthetic restoration. We exposed the implants with simple stab incisions and apically positioned flaps. In regio 22 we expanded the gingiva with a roll flap so that a natural and attached soft tissue situation could be preserved around the implant and the crown (**Fig. 14**).

Because we wanted to individually contour the soft tissue, we screwed on the platform switching impression posts for the closed tray technique and sutured the

soft tissue (**Fig. 15**). To provide better support for the model, we placed the bite register over the impression posts. We then took an impression of the situation using an individually prepared tray. After the impressing taking, the impression posts were replaced by straight healing caps that remained in the mouth until the patient attended the appointment to insert a screw-retained temporary plastic bridge. The temporary prosthesis was milled by us around the implants. In the laboratory the impression posts were screwed onto the lab analogs, inserted into the impression, and injected around with silicone for the removable gingival mask. After the mask had cured, the upper jaw master model was fabricated.

In our clinic the focus is always on the natural appearance of a restoration. This includes not only the anatomical design of the crown emergence profile but also the basal contouring of the pontics [8]. To achieve this, the dental technician places the esthetic set-up on the model and draws the cervical contours of the crowns and pontics onto the master model [9]. The gingival mask in the areas of the pon-

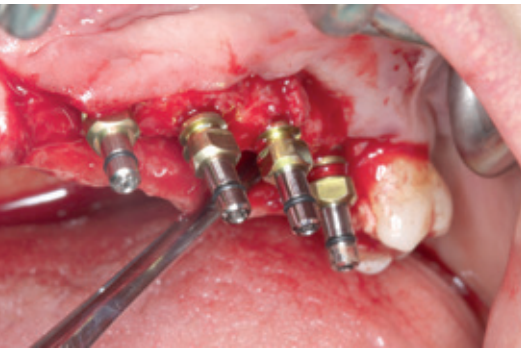


Fig. 10: To avoid a sinus lift, a 9-mm CAMLOG® SCREW LINE implant was inserted in regio 26.

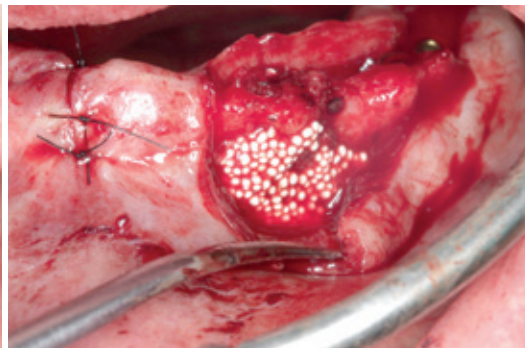


Fig. 11: Using a mixture of autologous bone and bone graft material, smaller bone defects were evened out.

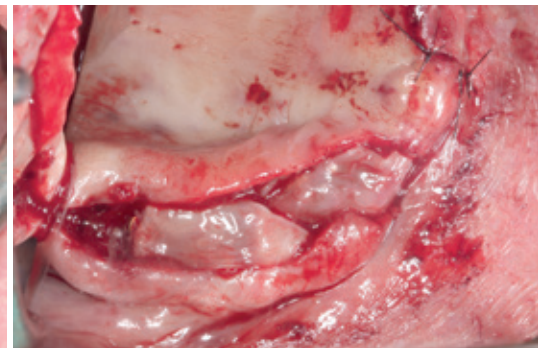


Fig. 12: To encourage wound healing, the bone was covered with PRF membranes and the soft tissue was closed up.

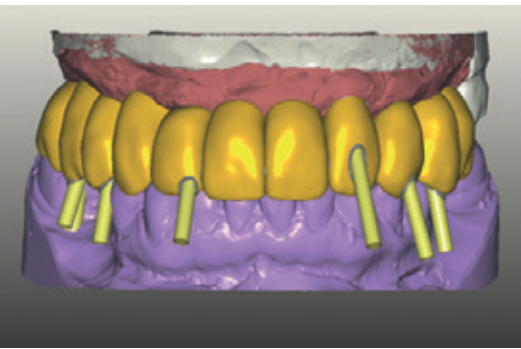


Fig. 16: In the laboratory the data from the backward planning were matched with the current scan of the model.



Fig. 17: The fit of the direct screw-retained temporary plastic restoration was checked on the model.



Fig. 18: The basal view shows the anatomical, pontic-shaped support of the bridge elements.



Fig. 19: The stably seated plastic bridge was inserted to contour the soft tissue.

tics is trimmed as a pontic. This exerts a slight pressure on the gingiva to produce an anatomical soft tissue scalloping and the interdental spaces are closed by papillae. The diagnostic set-up was transferred to a screw-retained plastic base and the tension-free fit of the bridge as well as function, phonetics, and esthetics were checked in the clinic. The dental technical then carried out the necessary CAD/CAM processes. The scan marker was screwed onto the lab analogs and the model was scanned in the strip-light scanner (Zirkonzahn) both with and without the gingival mask. The set-up, the opposing jaw, and

the articulator situation were captured digitally and matched to the data used to design the screw-retained plastic bridge (**Fig. 16**). To design the emergence profile, the abutment bases were prepared and the digital set-up was positioned with the help of the *in situ* scan. The digitally designed construction was milled in tooth-colored plastic (Tembase, Zirkonzahn) with the implant connection fabricated completely in plastic. The fit of the construction was checked on the model, and the holding pins were separated and ground off (**Fig. 17 and 18**). The teeth were contoured fully anatomically. Twelve days after exposure of the implants, we inserted the temporary bridge, checked the occlusion and the bite height, closed the screw access channels, and discussed tooth shape and size. We recorded the minor changes the patient requested so that they could be incorporated into the final restoration (**Fig. 19**).

Fabrication of the full ceramic restoration on eight DEDICAM abutments

After five weeks during which the patient had become accustomed to the fixed

restoration, we prepared tooth 27 and adapted the implants in the upper jaw to the surrounding soft tissue situation. Our dental technician screwed the impression posts onto the master model for the open tray technique and splinted with Pattern Resin. He separated the plastic bar into individual segments using a fine cutting wheel. We screwed in the impression posts in the mouth and splinted the gaps before taking the impression with Pattern Resin. Noting all the relevant technical criteria, the model was fabricated in the laboratory, articulated, and then scanning posts were screwed on and the model was scanned. The data for the set-up stored in the software were compared to the current data. We checked that the implants had been precisely transferred by having a CAD/CAM bridge fabricated from machinable green plastic. We placed this in the mouth and checked that the restoration fit free of tension. We then prepared the lateral teeth in the lower jaw to fabricate the zirconia bridges from the first premolar to the second molar. We used the green plastic bridge to determine the occlusal distance (**Fig. 20**). After the bite registration and impression taking in the lower jaw,

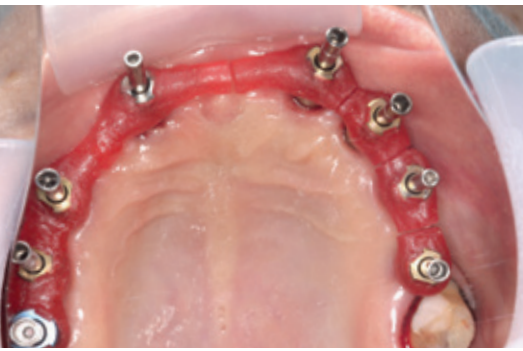


Fig. 20: For the final impression taking, the impression posts were splinted with pattern resin.

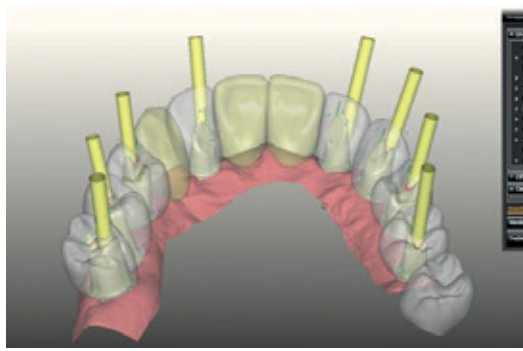


Fig. 21: The image shows the optimal prosthetic positioning of the implants and the abutment design below the bridge restoration.

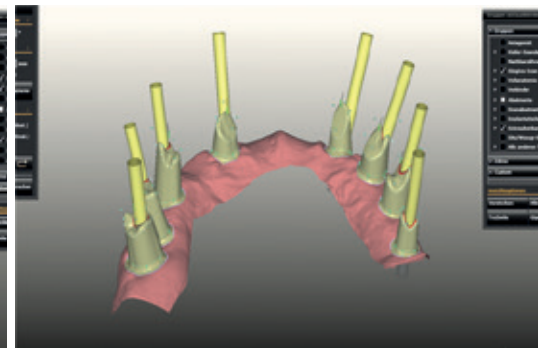


Fig. 22: The epigingival position of the palatal abutment shoulder is checked. In the esthetic zone the shoulder is about 1.5 mm subgingival.

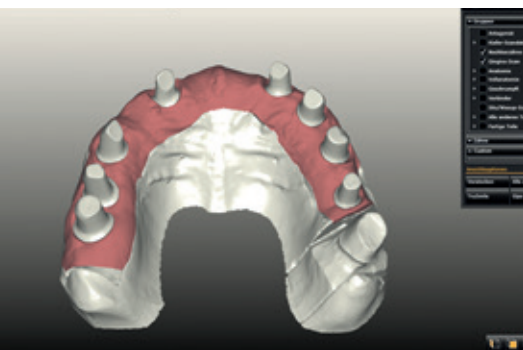


Fig. 26: The model with the attached titanium abutments was scanned and the data fed into the CAD software.



Fig. 27: The zirconia bridges and the IPS e.max® CAD crowns were adapted to the abutment transitions and the gingival situation and positioned in the blanks for milling.



Fig. 28: After sintering the zirconia bridge with the labial reduction for the individual veneering, the bridge was tried in the mouth.

we screwed the green bridge off, inserted the tooth-colored plastic bridge again, and restored the lateral area temporarily with prefabricated temporary veneers. To implement the CAD/CAM restoration, the dental technician used the construction data acquired for the temporary restoration as the basis for designing the individual titanium abutments (**Fig. 21**). He constructed this beneath the virtual bridge. He placed the abutment-crown transition with a pronounced milled chamfer in the visible area about 1.5 mm below the gingival margin. This ensures harmonious esthetics and enables access to remove any excess cement. The construction data for the eight titanium abutments were uploaded to the Dental Manager and they were ordered from the DEDICAM fabrication service (**Fig. 22 to 24**). The polished DEDICAM abutments were delivered after two days. The dental technician screwed them onto the model implants, checked the design using a silicone index, and checked the location of the abutment shoulders (**Fig. 25**). He then scanned the model again, and matched the data with the data saved in the software (**Fig. 26 to 28**). He constructed the three-part restora-

tion on the abutments, reworking the vestibular part of the zirconia bridge, which was to be individually veneered, for the ceramic veneers. These parts were marked for the reduction and virtually reduced by 0.6 millimeters. To avoid chipping of the labial surfaces, the incisal edges must remain in zirconia. The zirconia bridges from 14 to 22, 34 to 37, and 44 to 47 were positioned in the blank and milled. The software enables free positioning of the bridges in the zirconium oxide blank and the generation of an optimally designed sintering stabilizer that ensures that no warping occurs during sintering. The splinted implant crowns 23, 24, 26, and 15, 16, and the individual crown on 27 were fabricated as monoliths in IPS e.max® CAD. The crowns and bridges were sintered and the fit was checked on the model. At this stage of the fabrication, we made a raw firing try-in to check the fit, occlusal planes, tooth length, and function. The pontics were clearly contoured through the plastic bridge (**Fig. 29**). After checking the occlusion, the finishing was carried out in the laboratory. The vestibular parts of the upper jaw anterior bridge and the premolars in the lower jaw were individually veneered

by the dental technician with appropriate ceramic compounds. The color of the monolithic crowns was adjusted with the help of stain firing and the crowns were then glazed and polished (**Fig. 30 and 31**).

After the finishing, the restorations for the upper and lower jaws were inserted in the clinic. The screw-retained plastic bridge was removed and the implant connection was cleaned with 2% chlorhexidine solution. The DEDICAM titanium abutments must be promptly inserted so that the contoured soft tissue does not collapse (**Fig. 32**). The bridges and the splinted crowns were then attached for a final check of the esthetics (**Fig. 33 and 34**). Because the requests of the patient and the functional requirements had been incorporated into the screw-retained temporary restoration and "frozen" in the scan, we prioritized checking the red and white esthetics. This was encouraged by the immobile attached keratinized gingiva, which we had achieved by thickening with roll flaps at 22 and apically repositioned flaps during the exposure (**Fig. 35 and 36**).

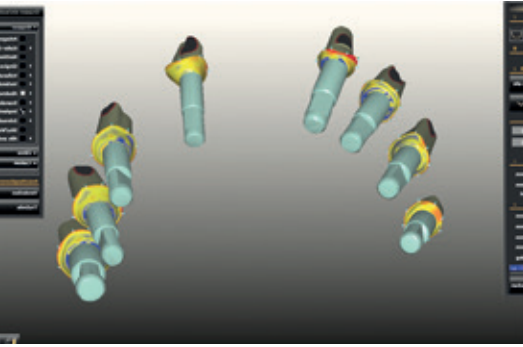


Fig. 23: In the abutment design program, the anatomically contoured subgingival areas were checked.

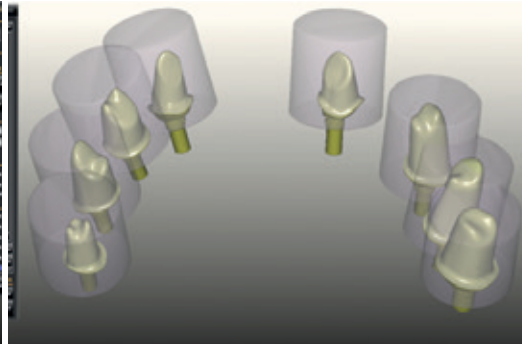


Fig. 24: Before uploading the abutment onto Dental Manager, the machinability was checked in the image of the preform.



Fig. 25: The DEDICAM titanium abutments supplied were screwed onto the model and the position of the abutment shoulders was checked.

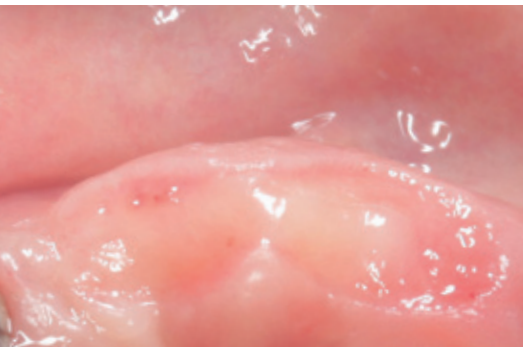


Fig. 29: The basal gingival support for the pontics was anatomically shaped. Pseudopapillae formed between the anterior teeth.

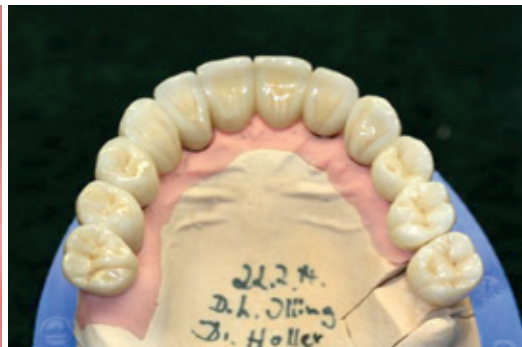


Fig. 30: The monolithic occlusal surfaces and palatal parts of the zirconia bridges were individually stained.



Fig. 31: The photograph shows the precise transition from the highly polished subgingival parts of the DEDICAM titanium abutments to the zirconia crowns.



Fig. 32: The individual subgingival design of the DEDICAM abutments integrates into the contoured soft tissue without exerting any pressure.



Fig. 33: The zirconia bridges and full ceramic crowns were cemented. Excess cement was easy to remove because of the optimal positioning of the crown-abutment transitions.

We cemented the implant-supported zirconia crowns and bridges and the IPS e.max® CAD crowns with dual-cure, semi-permanent Harvard luting cement and the zirconia bridges on natural teeth with glass ionomer luting cement from 3M Espe (Ketac® Cem). Due to the optimal positioning of the crown-abutment transitions, the cement excesses could be easily and precisely removed. After another check of the occlusion and function, we took impressions to prepare an occlusal splint for protection at night.

Conclusion

In complex clinical situations, preparing a comprehensive treatment concept as well as good and expert technical communication between all parties is essential for a functional and esthetic restoration that is stable over the long term. An immobile, attached and possibly keratinized gingiva around the implant penetration point protects against bone loss and ensures natural red and white esthetics. In the surgical phase, it must be ensured that tension due to cheek ligaments and mobile mucosa in



Fig. 34: The photograph shows the full ceramic reconstruction of the lower jaw lateral teeth.



Fig. 35 and 36: The radiograph of the overall reconstruction with a satisfactory full ceramic restoration. After the cementing and a final functional check, a happy patient left the clinic.

the implant regions is eliminated. Keratinized gingiva and thickening of the soft tissue can be achieved using appropriate surgical flap techniques.

Familiarity with surgical techniques and the use of biocompatible materials and their processing play a considerable role in ensuring a successful final outcome. Zirconium oxide has good mechanical properties in addition to its precise industrial

fabrication process (CAD/CAM technique). Numerous *in vitro* and *in vivo* studies have been published on this subject and confirm the outstanding biocompatible properties of the material [10, 11]. Because of the biologically inert character of the material, corrosion does not occur when it comes into contact with other metals or alloys in the oral cavity. As a result of the lack of toxicity of the material in a wide range of cells, studies have confirmed that

zirconium oxide plays an active role in soft tissue healing and attachment, thus minimizing the accumulation of plaque and bacteria [12].

In addition to successful osseointegration of the implants, close adaptation of the soft tissue to the suprastructure is important for the long-term clinical success of the implant restoration.

LITERATURE

- [1] Heydecke G., Zwahlen M., Nicol A., Nisand D., Payer M., Renouard F., Grohmann P., Mühlemann S., Joda T., What is the optimal number of implants for fixed reconstructions: a systematic review. *Clin Oral Implants Res* 2012;23 Suppl 6:217-228.
- [2] Ackermann KL, Kirsch A., Nagel R., Neuendorff G. Mit Backward Planning zielsicher therapieren. Teil 1 Teamwork 2008;4:466-484.
- [3] Schley JS, Terheyden H, Wolfart S., Implantatprothetische Versorgung des zahnlosen Oberkiefers. S3-Leitlinie. AWMF-Tegisternr. 083-010. *DZZ* 2013;68:28-41.
- [4] Araújo MG, Silva CO, Misawa M, Sukekava F, Alveolar socket healing: what can we learn? *Periodontol* 2000. 2015 Jun;68(1):122-34. doi: 10.1111/prd.12082.

- [5] Steiner AE, Schmidinger S, Schnittverläufe am resorbierbaren Kiefer, *Orale Implantologie*, Quintessenz Berlin 1977: 2.
- [6] Nisand D, Renouard F., Short implant in limited bone volume. *Periodontol* 2000. 2014 Oct;66(1):72-96. doi: 10.1111/prd.12053.
- [7] J. Choukroun et al., Platelet-rich fibrin (PRF): A second-generation platelet concentrate. Part IV: Clinical effects on tissue healing, *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006;101:E56-60.
- [8] Schweiger J., Beuer F., Stimmelmayer M., Edelhoff D. Wege zum Implantatabutment. *dental dialogue* 2010;11:76-90.
- [9] Linkevicius T, Vindasiute E, Puisys A, Linkeviciene L, Maslova N, Purieni A. The influence of the cementation margin position on the amount of undetected cement. A prospective clinical study. *Clin oral Implants Res*. 2013;24(1):71-6.

- [10] Kutkut A, Abu-Hammad O, Mitchell R. Esthetic Considerations for Reconstructing Implant Emergence Profile Using Titanium and Zirconia Custom Implant Abutments: Fifty Case Series Report. *J Oral Implantol*. 2013 Oct 31. [Epub ahead of print]
- [11] Schmitter, M., Musstotter, K., Rammelsberg, P., Gabbert, O., Ohlmann, B.: Clinical performance of long-span zirconia frameworks for fixed dental prostheses: 5-year results. *J Oral Rehabil* 39, 552-557 (2012).
- [12] Kajiwara N1, Masaki C, Mukaibo T, Kondo Y, Nakamoto T, Hosokawa R. Soft tissue biological response to zirconia and metal implant abutments compared with natural tooth: microcirculation monitoring as a novel bioindicator. *Implant Dent*. 2015 Feb;24(1):37-41. doi: 10.1097/D.000000000000167.

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**Dr. Albert Holler**

Dr. Albert Holler studied at the Friedrich Alexander University in Erlangen-Nürnberg and graduated as a dentist in 1987. During his dental residency, he earned his doctorate and took up private practice in 1990 in Arzberg. He completed specialist training in prosthetics with Professor Gutowski and specialist training in plastic periodontal surgery and implant dentistry at IPI with Dr. Bolz, Professor Hürzeler, Professor Wachtel, and Dr. Zuhr. Since 2000 Dr. Albert Holler has operated his clinic with Astrid Eichler. He became certified as a specialist in periodontology in 2006 and in implant dentistry in 2008. Dr. Holler is a member of DGZMK, DGP, DGI, and Prophylaxe e.V.

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**Dr. Marc-André Grundl**

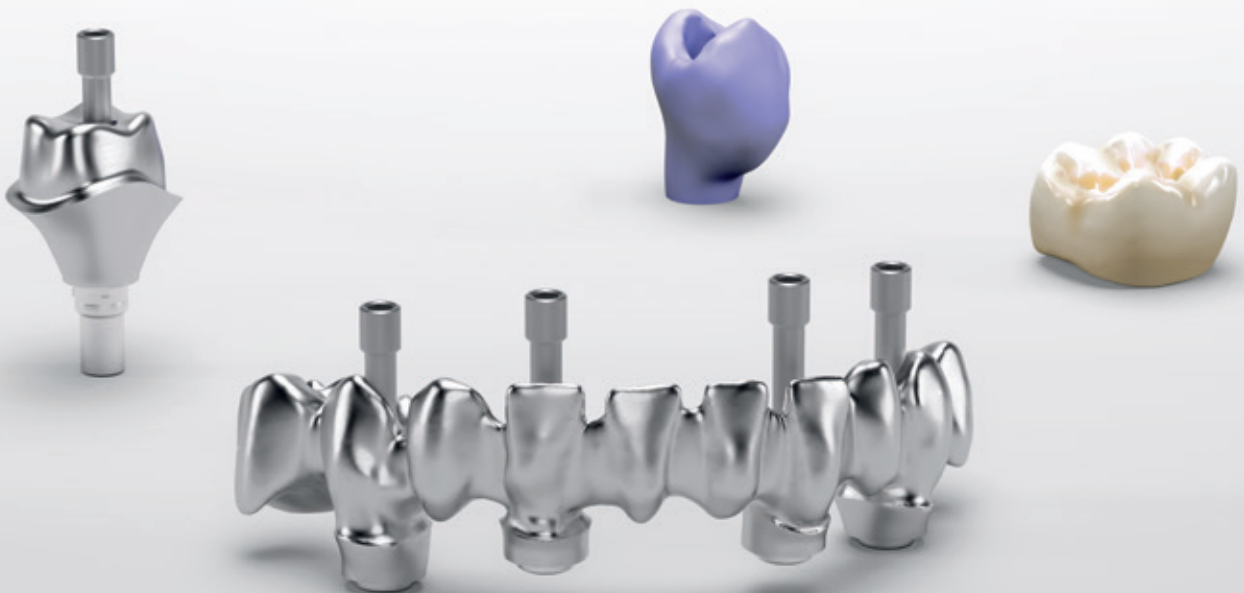
After completing his dentistry studies in Regensburg, Dr. Marc-André Grundl graduated in 2003 as Dr. med. dent. He was employed as a preparation assistant in Straubing and then worked as a training assistant for Professor R. Dammer, a oral and maxillofacial surgeon in Straubing. In 2007 he obtained accreditation as a dental specialist in oral surgery and took up private practice in the joint clinic with Professor Dammer. After certification as a specialist in implant dentistry, he established his own clinic in Marktredwitz. Dr. Grundl is a member of the DGZMK, DGI, and the Bavarian Society for Dental, Oral and Maxillofacial Surgery.

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**MDT Kurt Illing**

In 1992 Kurt Illing graduated from the master school in Munich after completing his training as a machine builder and subsequent dental technician training. He founded his dental laboratory in Marktredwitz where, together with Dr. Albert Holler, he organizes professional education courses focusing on the combination technique and full ceramic and implant-supported restorations. Since 2005 he has been fabricating complex implant-supported restorations in full ceramic and zirconia with the help of his own CAD/CAM system.



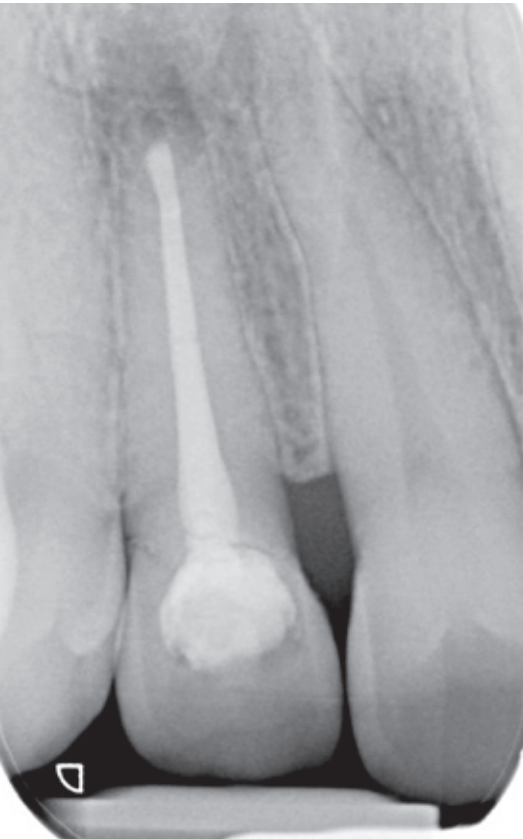


Fig. 1: Tooth 12 was horizontally fractured and therefore had to be removed.



Fig. 2: The initial clinical situation is characterized by gaps between the upper and lower anterior teeth.



Fig. 3: Large gap regio 12.

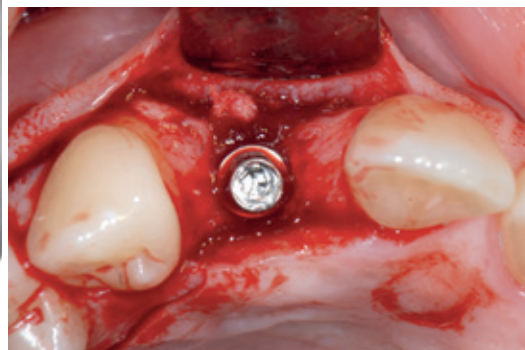


Fig. 7: Positioning of the iSy implant below the dental tubercle for palatal screw retention. Bone chips from the drilling site were inserted buccally.



Fig. 8: Soft tissue augmentation using a thick connective tissue transplant harvested from the palate.



ESTHETICS AND FUNCTION IN THE ANTERIOR AND LATERAL AREAS – EFFICIENTLY IMPLEMENTED WITH iSy

Dr. Andreas Kraus, Peiting

The iSy Implant System was launched on the market at IDS in 2013. Along with high quality standards, iSy is also characterized by outstanding efficiency and cost effectiveness. Both these aspects formed the heart of the iSy System concept right from the start and represent the added value of the product concept. At the same time, the completely redeveloped iSy Implant System was provided with quality features and properties that ensure outstanding functional and esthetic treatment outcomes. Dr. Andreas Kraus has been an iSy user from the word go. He uses the system for a wide range of indications and presents two of his own patient cases here.

iSy in everyday use

The iSy Implant System attracted our interest right from the start thanks to its sophisticated product and application concept. After testing the product in the clinic for the standard indications, we extended the range of indications of the system extensively and now feel that there are

hardly any restrictions on its clinical use. Our experiences refer to 142 iSy implants that we inserted from April 2013 to September 2015. The two case studies described below reveal the various options that the system offers us in routine clinical use.

Anterior reconstruction regio 12

The 53-year-old patient presented in our clinic with a horizontally fractured tooth 12 with root fillings (**Fig. 1**).

The clinical findings eight weeks after tooth extraction are shown in **Figures 2 to 4**.



Fig. 4: From the incisal approach there appears to be a soft tissue and bone defect.



Fig. 5 and 6: Photograph of the implant region. Using the Luer bone rongeur, a plateau was prepared in the correct vertical position. Incision with no vertical relief incision.

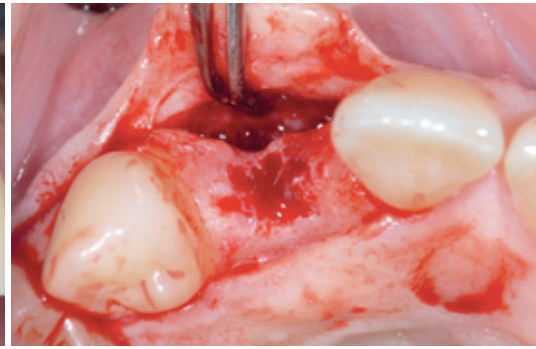


Fig. 9: Suturing around the iSy gingiva former mounted on the implant base (suture material Glycolon®, Resorba, 5.0 absorbable).



Fig. 10: The soft tissue lies close to the iSy gingiva former (PEEK).

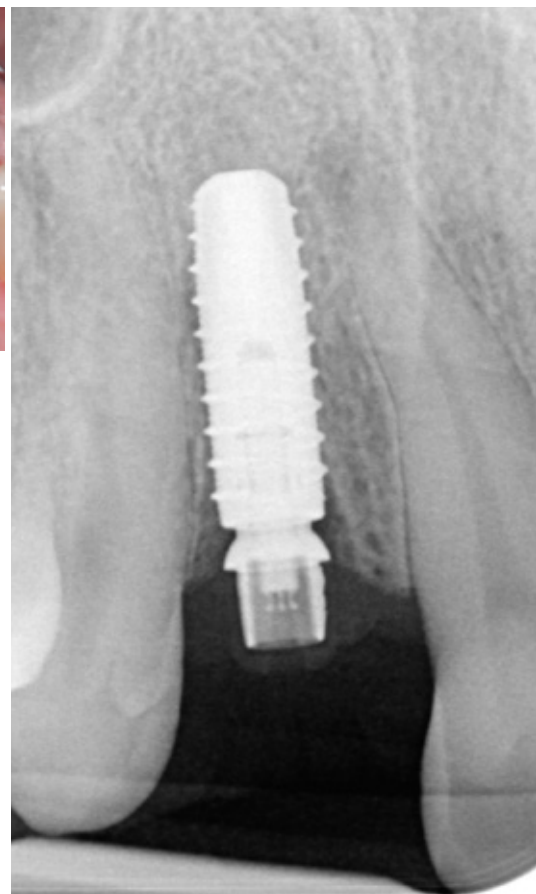


Fig. 11: Control radiograph after implant placement (iSy implant diameter 3.8 mm, length 11 mm).

After explaining the available treatment options in detail, the patient opted for an implant-supported prosthetic restoration. The implantation was done eight weeks after tooth extraction as a delayed immediate implant placement. The iSy implant was positioned so that it sits below the dental tubercle and the restoration can be screwed in from the palatal direction (**Fig. 5 to 7**).

Transgingival healing

Even though subgingival healing is also possible with the iSy Implant System, we almost always prefer transgingival healing. This is very easily implemented with iSy using the premounted implant base, which also acts as an insertion post, and the PEEK gingiva former that can be attached to the implant base (**Fig. 8 to 11**). We know from the literature that a transgingival approach in the esthetic zone has no drawbacks, even with moderate bone augmentation [1]. During the healing period, no prosthetic restoration was inserted at the patient's request.

Simple prosthetic transfer

The prosthetic restoration was completed after three months' healing. The healing proceeded without any complications and the soft tissue was very nicely contoured (**Fig. 12 and 13**).

The prosthetic concept behind the iSy Implant System enables subsequent steps to be carried out very easily on the implant base: impression taking, bite registration, and the temporary restoration.



Fig. 12: Situation after three months' healing.



Fig. 13: View of the iSy implant base after removal of the iSy gingiva former. The soft tissue appears nicely thickened and robust.



Fig. 14: The multifunctional cap is mounted on the implant base. It enables highly precise impression taking.



Fig. 15: The retentions were filled with impression material (Impregum™, 3M Espe).



Fig. 16: The multifunctional cap shortened according to the terminal occlusion.



Fig. 20: Taking the impression of the gingiva using the custom gingiva former prepared chairside.



Fig. 21 and 22: Situation two weeks after the soft tissue conditioning.

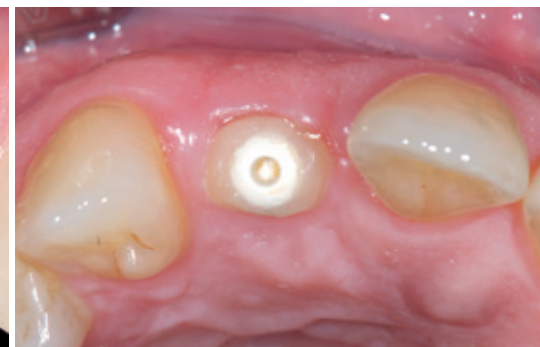


Fig. 26: The long-term temporary restoration.



Fig. 27: Closing the very large gap was not forced.

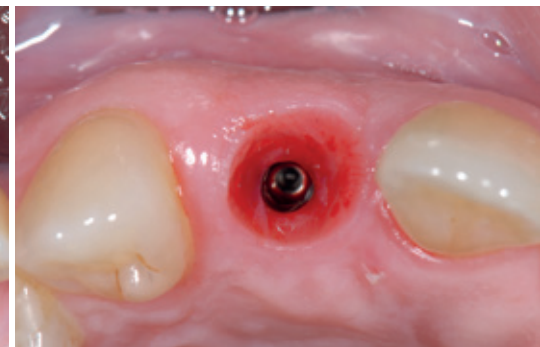


Fig. 28: Situation after removal of the long-term temporary restoration.

For the impression taking and bite registration we used the multifunctional cap that is mounted on the implant base precisely and which is secured against rotating. During the impression taking, ensure that the retentions on the multifunctional cap are filled with impression material. This ensures that the multifunctional cap is held securely in the impression material and the implant position can be transferred to the model with a high degree of precision (**Fig. 14 and 15**).

The bite registration is done in the standard intercuspation position. To do this, another multifunctional cap (each iSy implant in-

cludes two multifunctional caps) is shortened on the basis of the occlusal situation and the bite registration is performed using the Shimstock protocol (**Fig. 16 and 17**).

Soft tissue conditioning and prosthetic restoration

To condition the soft tissue in accordance with the planned emergence profile, the gingiva former was modified extraorally with composite material and reinserted (**Fig. 18 to 22**). The initial slight anemia disappeared after a few minutes and the soft tissue subsequently looked very good.

The modified gingiva former is replaced after about two weeks with a long-term temporary restoration (**Fig. 23 to 27**). The final restoration of zirconium oxide ceramic is then attached (**Fig. 28 to 33**).

I would like to thank MDT Verena Grumber, Weilheim, for her assistance with the dental technician aspects of this case.



Fig. 17: The bite registration (LuxaBite, DMG) was carried out using the Shimstock protocol.

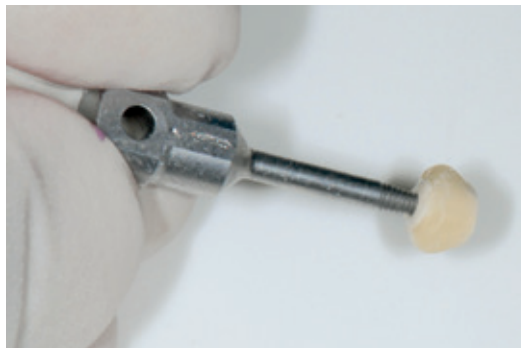


Fig. 18: The iSy gingiva former was modified extraorally with composite to form a trapezoid.



Fig. 19: Situation after insertion of the modified gingiva former. Slight anemia is apparent.



Fig. 23: When the gingiva former was removed, the soft tissue was completely free of irritation.



Fig. 24: Occlusal view of the iSy implant base.

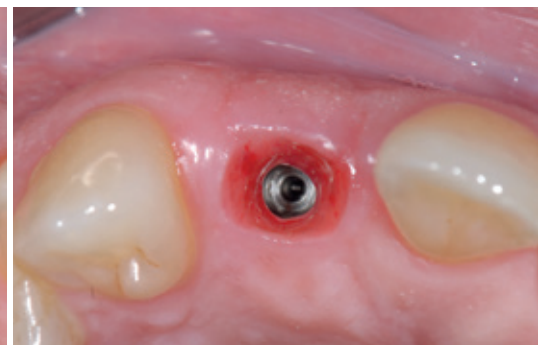


Fig. 25: Funnel-shaped soft tissue contouring around the implant.



Fig. 29: Immediately before insertion of the final restoration.



Fig. 30: The final zirconium oxide ceramic restoration blends harmoniously into the dental arch.



Fig. 31: Close-up of the final restoration from the labial direction ...



Fig. 32: ... and the incisal direction.

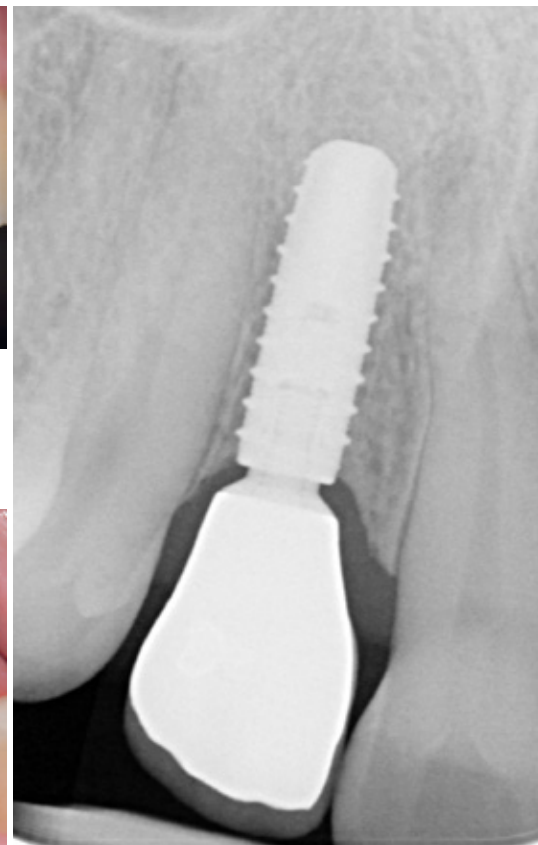


Fig. 33: The control radiograph reveals the outstanding osseointegration with the platform switching achieved with the system.

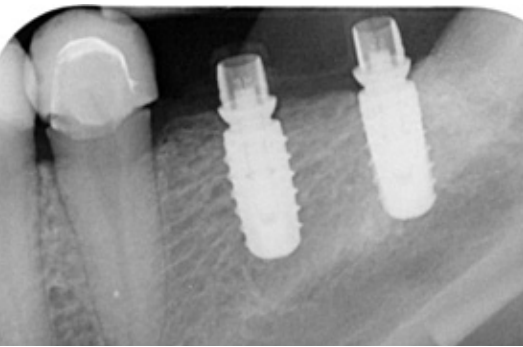


Fig. 34: Second case study: Insertion of two iSy implants with diameter of 4.4 mm, length 11 mm.



Fig. 35: Situation after two months' transgingival healing.



Fig. 36: Occlusal view of the implant bases. Preparation of tooth 35 for a full ceramic crown.

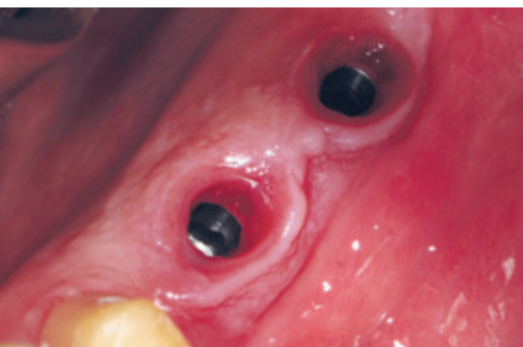


Fig. 40: Two weeks after the impression taking and the bite registration the implant bases were removed.



Fig. 41 and 42: The hybrid abutment crowns were screwed in from the occlusal approach. The screw channel was sealed with a filling composite.



Fig. 43: The clinical result immediately after the placement.

Second case study: Functional restoration in the lateral area

For the second case study, two iSy implants were used in the lateral area regio 36 and 37. The implant placement was carried out in August 2013. The surgical and prosthetic protocol could be reduced to a minimum in accordance with the underlying concept of the iSy Implant System. No additional augmentation measures were carried out apart from buccal insertion of bone chips harvested during the preparation of the implant bed. The clinical protocol adhered to the familiar iSy concept with transgingival healing. We achieved the final restoration very quickly from implant placement, osseointegration, and soft tissue healing as well as impression taking and bite registration.

The final full ceramic restorations (IPS e.max® Press, Ivoclar Vivadent) were screw-retained occlusally. The ceramic crowns were fabricated in the laboratory as a single unit, stained and glazed, and bonded to the iSy titanium bases with Multilink® implant using CAD/CAM. The

ceramic surface in the screw channel was etched extraorally with 5% hydrofluoric acid and silanized (Monobond Plus, Ivoclar Vivadent). After insertion of the hybrid abutment crowns, these were tightened with 20 Ncm. The screw channel was then sealed up completely and esthetically with filling composite (**Fig. 34 to 44**).

The clinical and radiographic situation 25 months after implant placement can be seen in **Figures 45 and 46**. The treatment outcome is functionally and esthetically stable. The highly efficient and safe use of the iSy Implant System was able to maximize the cost/benefit ratio for the patient.

I would like to thank MDT Herbert Hasler, Murnau, for his assistance with the dental technician aspects of this case.

Conclusion

The iSy Implant System is an absolute plus for our implant dentistry treatment spectrum. The motivation for us to use iSy lies in the well thought-out and patient-appropriate product concept. The obvious transgingival approach resulting from the

premounted implant base offers a number of advantages. The final restoration can be carried out with this two-part implant system with only a single abutment change, with corresponding positive outcomes for the biology of the hard and soft tissue [2]. Platform switching will soon be incorporated into the system with a conical implant-abutment connection and also offers a number of advantages [3, 4]. A slightly subcrestal positioning of the iSy implant encourages adequate gingival thickness when combined with platform switching – and soft tissue augmentation where necessary – which has positive outcomes for preserving the crestal bone level [5].

That iSy is also economically very attractive for all those concerned may encourage opting for an implant therapy concept and satisfies patient requests for prosthetic restorations that combine esthetics, function, and long-term stability.



Fig. 37: The iSy multifunctional caps are easily mounted on the implant bases for impression taking.



Fig. 38: Adequate vertical space is seen in the intercuspal position.



Fig. 39: Determination of the jaw relations in the terminal occlusion. The registration material (LuxaBite, DMG) is applied only in the areas missing occlusal contacts.

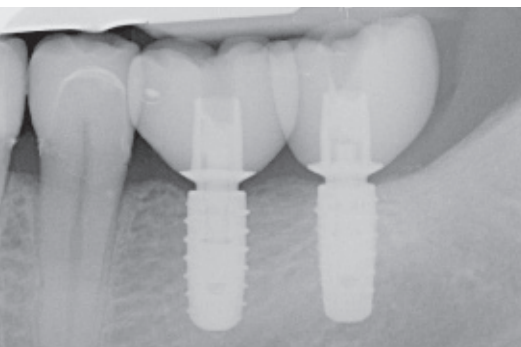


Fig. 44: The radiographic outcome immediately after the placement.



Fig. 45: Stable conditions 25 months after surgery.

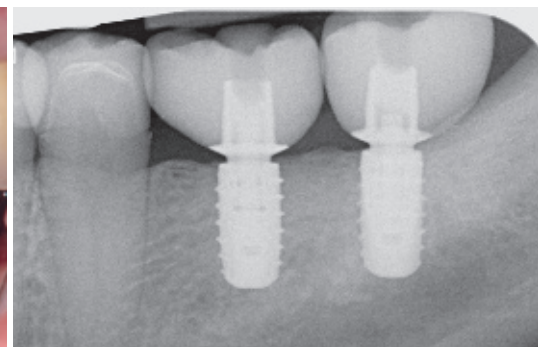


Fig. 46: An impressive result seen in the radiograph 25 months after surgery.

LITERATURE

- [1] Cordaro L, Torsello F, Chen S, Ganeles J, Brägger U, Hämmerle C. Implant-supported single tooth restoration in the aesthetic zone: transmucosal and submerged healing provide similar outcome when simultaneous bone augmentation is needed. *Clin Oral Implants Res.* 2013 Oct;24(10):1130-6.
- [2] Becker K, Mihatovic I, Golubovic V, Schwarz F. Impact of abutment material and dis-/re-connection on soft and hard tissue changes at implants with platform-switching. *J Clin Periodontol.* 2012 Aug;39(8):774-80. doi: 10.1111/j.1600-051X.2012.01911.x. Epub 2012 Jun 7.
- [3] Schwarz F, Alcoforado G, Nelson K, Schaer A, Taylor T, Beuer F, Strietzel FP. Impact of implant-abutment connection, positioning of the machined collar/microgap, and platform switching on crestal bone level changes. *Camlog Foundation Consensus Report. Clin Oral Impl. Res.* 0, 2013, 1-3 doi:10.1111/crl.12269.
- [4] Atieh MA, Ibrahim HM, Atieh AH. Platform switching for marginal bone preservation around dental implants: a systematic review and meta-analysis. *J Periodontol.* 2010 Oct;81(10):1350-66. doi: 10.1902/jop.2010.100232.
- [5] Linkevicius T, Puisys A, Steigmann M, Vindasiute E, Linkeviciene L. Influence of Vertical Soft Tissue Thickness on Crestal Bone Changes Around Implants with Platform Switching: A Comparative Clinical Study. *Clin Implant Dent Relat Res.* 2014 Mar 28. doi: 10.1111/cid.12222. [Epub ahead of print].

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STRATEGIC POSITIONING

PLANNED DEVELOPMENT AND EMPHASIS ON STRENGTHS AND QUALITIES



Patients selectively choose a dentist or a practice these days. Particularly in areas of dense population where the density of dental clinics is disproportionately high, the image of the clinic becomes an economic necessity. Clinics and practices can no longer be managed without taking into account business management issues. The economic reality overtakes every clinic sooner or later. The role played here by strategic positioning is illustrated in this article using three clinics as examples.

The future-oriented process of strategic positioning is often underestimated, but ignoring positioning can result in time-consuming and expensive adaptations or strategy changes. Every clinic would do well to invest in strategic planning well before launching a business venture. This begs the question of which factors can be drawn on to strategically position and differentiate a clinic in the market environment. Even if a clinic has been long established, casting a critical eye over the business at regular intervals is worthwhile. Acquiring new specialist qualifications, expanding the treatment portfolio, adapting to a changing market, or wanting to acquire a new patient clientele may be reasons to modify the image.

Strategic positioning outlines the position of a clinic in the market. The positioning uses creative approaches to plan the orientation of the clinic with foresight and with a view to sustainability. It is therefore essential to honestly consider personal preferences together with specialist expertise

as well as the opportunities offered by the competitive environment. The aim of positioning is to shape the long-term success of the clinic in a way that can be planned. In this regard, positioning corresponds to the desired image that the clinic wants to anchor in the minds of potentially interested parties.

Various positioning opportunities are available to clinics, the most common of which are determined by the personality of the dentist. The trend to specialization means that more and more clinics are positioned using specialist certification. Positioning using a target group or price is also possible. Market niches can be used to focus on services or to place innovations at the heart of the clinic. Before entering private practice, dentists should also carefully consider market conditions using a site analysis along with an analysis of the market behavior of the target patient clientele.

Listen to your heart

In the first example, the owner of the clinic has harbored a passion for surgery from his time as a resident and continues his education with a relevant Master's course. When facing a decision about becoming self-employed in the middle of the 1990s, he weighs up the various options for his planned business venture. The business goal is strongly oriented towards business management. The owner of the clinic plans to appeal to the largest possible patient clientele to rapidly shift from the loss to the profit zone. Prosthetics appears to be a lucrative source of income that will be secure in the long term. For this reason, purchasing an established and renowned clinic with its own laboratory is chosen as the most sensible alternative. The focus of the clinic is not surgery, which goes against the owner's personal preferences. The key component of the clinic concept is now shaped by general dentistry and the clinic's laboratory.

In the initial years of his business, the owner of the clinic often feels dissatisfied with his job. After just two years he decides to change his strategy and includes implant dentistry in his treatment portfolio. In the following 2.5 years he inserts 250 implants. He finds the work easy and enjoys his new tasks. It is also clear that this shift explicitly enables the clinic to reach its financial goals. For these reasons, a second strategy change is implemented: Implant dentistry is now the specialist focus of the clinic. The target patient clientele shifts primarily to older patients. Because his clinic has its own laboratory and because the clinic had a fixed position in the market as a prosthetic clinic for many years, it is clear that is not possible to now build up a stable group of regular referrers. The clinic therefore continues to operate autonomously. The owner of the clinic passionately places himself at the center of the communication and in this way uses his own personality to differentiate his clinic in the market. The ingenious communication concept for the clinic considered a range of communication instruments such as a patient event concept to penetrate the market environment to an appropriate degree and thus to ensure a continuous intake of new patients wanting implants. The autonomous alignment in turn allows the clinic to catch the attention of potential patients.

Summary: Formulating a strategic positioning – particularly taking your own preferences into account – combined with specialist expertise would have resulted in the clinic focusing on implant dentistry. Changing strategy twice over the course would not have been necessary. This preliminary strategic work would have critically influenced important areas such as the type of business established, the communication model chosen, and ultimately even the choice of staff.

Be yourself

In the second example, a clinic positions itself as an ultra-modern referral clinic with multiple practitioners and a clearly defined treatment portfolio – the complete range of dental surgery. However, this does not differentiate the clinic in the local area because a dental colleague offers the same clinic concept.

The clinic wants to offer state-of-the-art dentistry at a continuously superior level

and again, this does not differentiate the clinic from others. To justify this approach, the clinic places enormous value on the professional development of both the dentists and the support staff. High quality, interdisciplinary, and friendly collaboration with colleagues in other disciplines is also a key component of the clinic concept. To intensify the collaborations, the clinic offers a fixed event concept with in-house training programs and live surgery.

The target patient clientele will be heterogeneous and be very interested in their own health. The insurance status does not play a role.

The clinic owners are perfectionists and passionate about their work, and they are convinced that you can only be really good if you really love your work. The fun and pleasure experienced by all members of the team at work are palpable in the clinic.

Summary: The high level of specialist expertise, the interdisciplinary collaborations with other medical practitioners, and the pleasure in the work are the factors that are drawn on in the communication and contribute to differentiation in the market environment.

Go your own way

In the final example, the clinic owner initially narrows the potential target group of her clinic before the clinic positioning: Her dream patients are well-off clientele, primarily international business clients, who want high-quality restorations.

For the clinic owner, a high standard of living is important and she would like to experience this in her clinic as well. The clinic is intended to be an expression of her personality. Unlike most of her dental colleagues, she therefore restricts her target patient group dramatically. From a demographic perspective, income, age, and profession play a role. Psychographic variables such as class identity and lifestyle are also critical.

Deciding where to locate the clinic is based on this segmentation. The owner of the newly established business selects a combination of innovation, target group, and service positioning: The clinic will be an innovative clinic, tailored to a specific homogeneous target group



and incorporating a high level of service. The clinic is perceived from the outside as a highly modern lifestyle clinic. Differentiation through technical progress is the motto. Patients view innovations as state-of-the-art dentistry with high-end restorations. The communication presence harmonizes with the clinic concept: From presentation in the media to visiting the clinic – all efforts are systematically aimed at meeting the requirements of the deliberately selected positioning. The additional benefits conveyed to the patient are high quality, exclusivity, and modernity.

The target patient clientele has high expectations. To satisfy these expectations, to ensure that the service processes are focused on the customer, and to convey a sophisticated atmosphere, the clinic developed an exceptional service concept. The aim of this is to create the most relaxed and pleasant environment possible for all those involved. The result of this approach is a highly emotional patient bond that means greater loyalty and attachment and ultimately a greater willingness to pay.

Even the treatment spectrum is aligned with the needs of these target patients: High-end dentistry, esthetic dentistry, occlusal disease, bruxism, bite elevation. Clinics oriented towards target groups rarely have to discuss prices because of the strong bond. It is therefore no surprise that the clinic has a turnover comparable to larger clinics despite a lower patient frequency.

Summary: This unusual and also polarizing type of positioning has produced the desired result in terms of the target patient clientele, the type of work, and ultimately the business goals aimed for: Positioning the clinic as an innovative clinic effectively ensures the acquisition of new patients. The specific combination of target group and service positioning then binds the patient to the clinic for the long term.

To appropriately differentiate a clinic, the question of wherein lies the uniqueness of the clinic in a defined environment must be asked. As a result of the very close contact with customers, it is critical for long-term

and sustainable positioning to know your own worth and to take it into account.

Personal attitude, internal disposition, and not least personal preferences play an important role. An honest look at your own personality is therefore essential when planning a clinic. Along with market and location analyses, an honest appraisal of the target patient clientele is another critical factor. I will dedicate the next article to the subject of “target patient groups” for this reason.

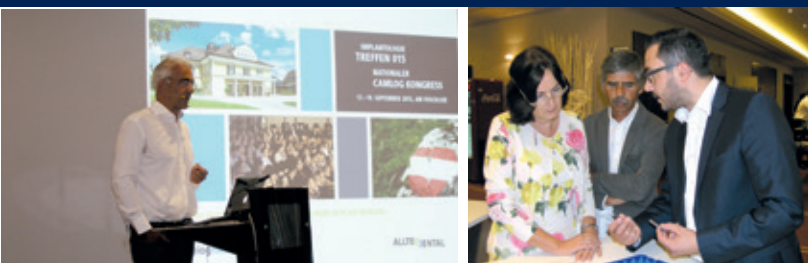
ONLY THE ONE WHO WALKS HIS OWN WAY CAN'T BE OVERTAKEN

Marlon Brando, American actor (1924–2004)



Andrea Stix, M.Sc., MBA
Consultant for communication strategy and practice marketing
Syst. Business Coach, NLP Coach, Business Trainer





5TH IMPLANT DENTISTRY MEETING 2015

NATIONAL CAMLOG CONGRESS AUSTRIA, SEPTEMBER 17-19 SEPTEMBER, 2015, FUSCHLSEE

The 5th Austrian CAMLOG congress was held in the congress hotel Sheraton Fuschlsee with its beautiful setting in the forested mountain region of Salzburg Flachgau. On the Thursday morning employees from Alltec greeted the first participants to the two workshops. The attendees had selected either the microsurgery course with Dr. S. Marcus Beschnidt or the workshop on the use of bone grafting with Dr. Stephan Beuer, M.Sc. The theoretical presentation was followed by intensive hands-on exercises, professionally instructed by the experts. They enabled the participants to practice what they had just learnt using animal models. A number of techniques, instruments, and equipment were presented and could be tested.

On the Friday morning a great number of expectant congress participants filled the foyer, spotting familiar faces, and obviously feeling right at home in the comfortable atmosphere surrounding the Alltec team.

In front of 140 specialists Alexander Jirku opened the congress, which promised exciting times thanks to the selection of issues covered and the presentations by renowned speakers. Dr. S. Marcus Beschnidt, Prof. Werner Millesi, Dr. Stefan Beuer, Prof. Gerald Krennmair, Dr. Hajo Peters, and Dr. Herbert Hulla provided a top quality program for the first day of the congress.

Reports from customers formed a picture of a congress conducted at a superior level with very good presentations.

Culinary delicacies and the opportunity to find out more about new products from CAMLOG from the Alltec employees ensured that there was plenty of distractions from the speakers during the breaks.

Twenty implant dentistry assistants attended a workshop led by Dr. Laurenz Maresch that was conducted in parallel to the scientific program. The materials technology and administrative preparation for implant surgery, interaction during surgery, and support providing during exposure, impression taking, and cementing were dealt with in the workshop.

Oktoberfest comes to Schlossremise

The date and the proximity to Munich were certainly the key reasons for organizing an Alltec Oktoberfest party. In proper style in dirndl and lederhosen, the group walked or took the shuttle bus to nearby Schlossremise, a magnificent location. Pierre Rauscher had the honor of opening the festivities by tapping the keg. The various buffets offered a range of sumptuous Bavarian delicacies, a succulent spit roast tempted all, and the beer flowed generously. A trio of musicians created a great atmosphere, pumping out familiar Oktoberfest

hits. Despite the late night, the hall filled again on Saturday punctually at 9 in the morning. The lecture program continued with more presentations. The very interesting specialist dental presentations by Dr. Claudio Cacaci and Dr. Florian Beuer were followed by a dental technical digression by Andreas Nolte. Prof. Rudolf Seemann provided a glimpse of an ongoing study of the true number of implant failures and the resulting inferences for surgery.

The congress was crowned with a lottery with the first prize a weekend away in the luxurious hide-away Hotel Schloss Pichlarn. Children of participants played the role of the lucky fairy and drew the winner: Mr Andreas Radl, Dental Technician. We congratulate him and hope he enjoys his prize.

After a standing buffet, it was farewell to a great congress location, two impressive days of constructive discussions, fun festivities, helpful input, and the pleasure of looking forward to the 6th National CAMLOG Congress in Austria.



WHITE GOLD AND ITS ECONOMIC INFLUENCE ON KRAKOW

What do you know about salt?

When you think about salt – without reading any further, what comes spontaneously to mind?

Certainly table salt. The gourmets amongst us think immediately of sea salt, then a few seconds later comes the softening salt for the dishwasher, and possibly also thawing salt for icy roads depending on the time of the year. As medical practitioners, you certainly know about smelling salts and anyone who is familiar with the practice of preserving meats and sausages knows about pickling salt.

But do you know what salts are made of and that in their elemental form they are essential for our survival? Along with the primary components sodium and chloride, these salts also contain important minerals such as calcium, magnesium, potassium, iron, zinc, and other trace elements. In earlier times salt was an important commodity and was called “white gold”. It was not only a nutrient but was also used to preserve food and was also used in ancient medicine. It’s not something simply to flavor food. We shall spare you a digression about the composition and vital properties of salts and refer you to Wikipedia. What is more interesting is the question of where salt actually comes from.

Because salt was only found in a few regions, but was used everywhere, even in ancient times there was a brisk trade in salt that bound together different peoples and cultures. Long trade routes developed that were known as salt roads.

Rock salt, which is extracted from salt mines, is the raw material for about 70 percent of table salt produced worldwide. The rest is harvested from sea salt. Rock salt is an evaporite and sedimentary rock that was produced naturally in the geological past by precipitation of concentrated sea water and survives in fossil form. It is made up exclusively of the mineral halite (sodium chloride, NaCl), and contains traces of potassium, calcium, bromine, iron, zinc, iodine, and magnesium and belongs to the halide group of minerals.

The salt trade was a profitable business and many cities became wealthy thanks to salt. Many names of locations in Germany refer to the earlier importance of the harvesting of rock salt (“Salz” in German) such as Salzdettfurth, Salzgitter, Salzbrunn, Salzuflen, and Salzburg as well as place names containing the stem “hall” from the German “vault” such as Halle, Bad Friedrichshall, Schwäbisch Hall, Hallstatt, and Hallein.

In Europe there are extensive and deep salt deposits that were formed during the Permian north of the Central German Uplands in an area ranging from France across Germany and extending to Poland (the former Zechstein Sea). In some areas the salt domes reach so high that they came into contact with the groundwater and formed salt springs. In the past, salt was harvested from those salt domes that were near the surface.



The Wieliczka salt mine

The Wieliczka (magnum sal, big salt) salt mine, one of the oldest salt mines in Europe, is located in Poland near Krakow. Here the traces of salt mining dating back to 3500 years BCE can be found. When the salt springs were exhausted by the middle of the 13th century, miners searched for underground salt springs, discovering the rock salt deposits in the process. Since the 15th century, machines were used below ground to mine the salt as well as horses from the 17th century on. Until the 18th century the mine extended only to a depth of 60 m with four additional levels later created below the existing mines that reached to a depth of 340 m. From the 14th century until 1772, the Wieliczka and Bochnia salt mines were combined as the Royal Salt Mines and thus formed the largest mining company in Poland.

The income from the salt trade, which made up to one-third of the Polish national income during its heyday from the 14th to the 16th centuries, was used to meet the costs for the construction of the Wawel, the Gothic royal palace, the academy, and the city fortifications in Krakow as well as being used to pay soldiers. The mining workforce comprised about 2000 people at this point, producing about 30,000 tons of salt a year.

In 1913 the salt works, which are still operating today, were built. After 1918 the mine became the property of the Republic of Poland which held the state monopoly on salt from 1932. In 1976 the mine was entered on the list of Polish national cultural monuments and in 1978 it was included on the UNESCO list of World Cultural and Natural Heritage.

Salt extraction only stopped in 1993. Since then, the mine has been used only for tourism and as a sanatorium. To prevent the mine and the city collapsing in case of penetrating water, any water is pumped to the surface and used to harvest evaporated salt. Wieliczka thus continues to be an important Polish salt producer. In 1989 the salt mine entered the list of endangered World Heritage and in 1994 became a monument forming part of the history of Poland.



The mine extends across an impressive 300 kilometers and reaches to a depth of 327 meters below the city. There is a special tourist tour for visitors to Krakow. On the 2.5 kilometer long route, visitors first travel to a depth of 64 meters in a miner's lift. From there, the tour moves along stunning walkways carved out by hand down wooden steps to a depth of 134 meters. Every year, more than a million visitors are attracted to the salt statues and galleries that the miners carved out of the salt blocks during the long nights underground, the enchanting underground lakes, original mining equipment, or the magnificent St. Kinga Chapel that is lit up

by enormous salt crystal lanterns. A famous relief that was found in the salt mine is the Last Supper that was based on the original by Leonardo da Vinci.

There is also a health resort deep underground that specializes in the treatment of respiratory diseases, halls for parties, a restaurant, overnight accommodation, and several meeting rooms.

Those participating in the 6th International CAMLOG Congress can visit the Wieliczka salt mine. We can heartily recommend this excursion and we guarantee that you will learn quite about "halite" there.



English-Polish
PHRASEBOOK

Part 3

English

Salt
Coffee
Milk
Sparkling mineral water
Still water
Beer
Wine
How much does it cost?
The bill please!

Polish

sól
kawa
mleko
woda gazowana
woda niegazowana
piwo
wino
Ile to kosztuje?
Rachunek prosz !

Pronunciation

[sool]
[kava]
[mlehko]
[wodah gasovana]
[wodah nigasovana]
[pivo]
[vino]
[ileh toh koshtoooye]
[ratshooneck proshe]