issn 1616-6345

Vol. 9 • Issue 1/2008

implants

international magazine of oral implantology

1 2008

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DGZI
Deutsche Gesellschaft für Zahnärztliche Implantologie e.V.

oemus

Dr Friedhelm Heinemann
President of DGZI

The Worldwide Implantology Trend

Dear Colleagues,

The year 2008 is going to be the year of implantology. Like no other discipline of modern dentistry, implantology affects almost all areas and ultimately acts as a sort of interdisciplinary tie. Furthermore, contemporary treatment concepts of oral rehabilitation should always entail an implantological approach, because in view of modern augmentation procedures and custom-made implants, today it is possible to perform oral implantations even under the most difficult bone conditions.
Despite all the progress that has been made, the focus remains on additional optimization of the periodontal endosseous interface and the associated topic of long-term success of implants. Worldwide, research teams at universities and implant developers of the leading implant manufacturers are trying to get a handle on the one problem area, the point of emergence of the implant, which is so crucial for the long-term success of the implant. In other words, the aim is to considerably improve soft tissue adherence at the neck of the implant and to decrease epithelial downgrowth. This means that today's dentists can avoid bone resorption around the implant, which has been described in previous studies. We thus eagerly look forward to the presentations on this exciting topic and others at this year's international meetings and in publications.
The DGZI and its partners from science, industry and practice will be working together at the highest professional level to find the solution to these issues. Our active contribution are our own scientific events and continuing education programs as well as participation in international know-how transfer. In this context, one upcoming highlight is the 4th Arab-German Implantology Meeting on march 7–8, 2008, in Dubai. Excellent international participation has made this meeting one of the most important implantological events in the Middle East and beyond. I hope to meet you at this international scientific meeting with colleagues and friends in march in Dubai.

In this spirit, I wish you, dear colleagues, a successful 2008.

Sincerely,

Dr Friedhelm Heinemann

Cover image courtesy by BEGO Implant Systems GmbH & Co. KG.

Divergence compensation of abutments—A comparative study based on the mathematical calculation

author_ Michael Pampel, Germany

_Purpose

In literature and manufacturer´s publications there are no exact data about the capacity and limits of individualization of the definite abutments for crowns, bridges and overdentures on Frialit®-2 and/or Xive® implants. Therefore the data for abutments have to be calculated by the use of a formula.

_Material and methods

First all abutments regarding the indications and construction were compared. The construction drawings and tables of dimensions made available by the manufacturer were consulted, in order to calculate thickness, height and given conicle angle. From this a formula was developed, in order to calculate the maximal possible conicle angle. The values for greatest possible divergence compensation of single crowns, bridges, both implant and tooth anchored suprastructures and multi-unit reconstructions were determined. The clinical consequencees were described.

_Results

All abutments for the anchorage of fixed and removable implant retained dentures are computed and compared. With the abutment's different diameters, the individualizing capacity are rising when the diameter becomes larger. In comparison to ceramic abutments the titanium abutments could be more shortened and more reduced in wall thickness, so that they have the highest values for divergence compensation. The solid titanium Telescopic Abutment could be modified most: the maximum conicle angle for a single crown on D6.5 implant is 64.7°.

_Conclusions

Intensively inclined implants of both systems do not seem to be compatible with the unmodified prosthetical components. The capacity of divergence compensation has not been examined. Practical consequences and recommendations in literature or manufacturer's publications are not exact and usable. The limit values of the material-depending, abutment-specific and technically increased conicle angle for divergence compensation could be computed by a mathematical formula. This has not been published before for abutments of the systems Frialit-2 and Xive as well as for the entire implantology.

_Introduction

Natural teeth usually have an oral angulation beween the longitudinal axes of root and crown, in particular for anterior teeth. That is the prosthetical or natural divergence. For implant-retained single crowns this divergence is in sagittal direction between implant and the prosthetical axis and must be adapted by the dentist and/or technician to the neighbour teeth for functional and esthetic requirements. If the longitudinal axes of implant and abutment are identical or less divergent than their conicle angles, straight and/or unchanged abutments can be used. If the divergence rises, straight or angled abutments can be used after appropriate individualization by preparation. This ist the prosthetical compensation for divergence.

An implantological divergence develops by different longitudinal axes between implants, between implants and teeth in bridges or betweem multi-implant reconstructions. This applies both with fixed and with


Fig. 1

Fig. 1_ The split temporary abutment TempBase allows immediate loading. It is supplied mounted to the implant and both will be installed simultaneously. After the use of the temporary crown TempBase Cap and progressive boneload it is removed, i.e. after 6 weeks or later.


Fig. 2

Fig. 2_ The EsthetiCap component serves at the same time as healing abutment and as temporary basis for a single crown (max. 6 months). Here the oval form is visable.

removable protheses. The reasons for an implantological divergence are:

- _ incorrect insertion technique
- _ anatomical conditions, despite parallel insertion in two dimensions.
- _ Surgical intendended angulation of the longitudinal axes to achieve an implant as long as possible
- _ to avoid hurting anatomical structures
- _ to avoid augmentation

However by the type of arch of the jaw and the inclination of the remaining alveolar ridge develops a divergence up to 90° and more in the level 'depths' (sagittal) for a suprastructure in two or more sextants. This appears despite parallelism in two levels: 'length' (vertical) and 'width' (transverse). Therefore a changed, lingual bent sagittal angulation, i.e. divergence in the third level 'depth', arises as a result of the different resorption in the jaw.

_Material und methods

The temporary abutment EsthetiCap (DENTSPLY Friadent, Mannheim, Germany) is made of plastic and can be shortened and angulated (nearly 15°, by practical experience). It can only be used six months, therefore it was not examined .

Also the TempBase Abutment of titanium (DENTSPLY Friadent, Mannheim, Germany), which is used only occasionally for non submerged healing and immediate loading. For this a prefabricated plastic component (TempBase Cap) is used for the temporary crown. This temporary abutment can be customized about 20° by preparation in the mouth. Then it needs an individual, direct temporary crown (Figure 1 and 2).[2]

Four definite straight - with four additional variations – and one angled abutment for the Frialit-2® and the Xive® implant (DENTSPLY Friadent, Mannheim, Germany) are existing for the production of crowns and bridges. They are compatible for both

_Abument characteristics and capacity of divergence compensation (1)

Single crowns **straight abutment** name	indication and characteristics	max. compensation for divergence manufacturer's data	result through
1. *EstheticBase*	individualizable abutment for crowns and bridges	„little adjustment of the prothetical direction"	calculation
2. *CeraBase*	metal-free restoration a) direct facing, occlusal screw b) full ceramic crown, cemented	„little adjustment of the prosthetical direction	calculation
3. *AuroBase*	Abutment, occlusal screwed or cemented – burn out – cast to	„Compensation of larger divergences"	none, because of individual modellation
4. *Telescopic Abutment*	direct facing, occlusal screwed single crown	„Compensation of greater divergences"	calculation

angled abutment name	indication and characteristics	max. compensation for divergence manufacturer´s data	result through
1. *EstheticBase* angeld	individualizable abutment for crowns and bridges	„defined divergence compensation of 15°"	calculation

Table 1

_Abument characteristics and capacity of divergence compensation (2)

multiple crowns and screwed bridges		max. compensation for divergence	
name	indication and characteristics	manufacturer´s data	result through
1. *Telescopical Abutment*	• conicle or • telescopic crowns	„compensation for abutment´s divergenc“	calculation
2. Abutment *AuroBase*	occlusal screwed crown or bridge *a)* cast to b) burn out	„compensation for greater divergences“	none, because of individual modellation
3. *MP Abutment*	abutment for screwed bridge, supragingival	„passive fit“	calculation
4. *MP Abutment Classic*	abutment for screwed bridge	„passive fit“	calculation

Table 2

_Abument characteristics and capacity of divergence compensation (3)

overdenture		max. compensation for divergence	
name	indication and characteristics	manufacturer´s data	result through
1. *Ball-Attachment*	Retention of a lower coverdenture on four implants	„up to 15°“	–
2. bar-type Abutment straight	Bar-type abutment (prefabricated) for bar-retained prosthesis	15°	–
3. *MP Abutment*	abutment a)supragingival b) classic	„passive fit“	calculation
4. *MP Abutment AuroBase*	– burnout – cast to	15°	none, because of passive fit and individual modellation

Table 3

MP = Multi-Implant

systems. For multiple, occlusal screwed implant retained suprastructures there is one abutment with two types (MP and MP Classic).[3]

Beyond that there are four abutments for gingival and implant-carried anchorage of prostheses, for which the question of incorporatione direction and/or divergence compensation has not been evaluated (Table 1, 2 and 3), because there is much movement between male and female component.

For the one-piece, non-submerged Xive TG implant five abutments are available: Titanium straight, Titanium 15° angulated, Burnout, Cast-to, Bar abutment.

Because of the supragingival position and the small overall height (2.0 mm) of the double square geometry the conicle angle is very large; an additional divergence compensation is not necessary and therefore was not examined.

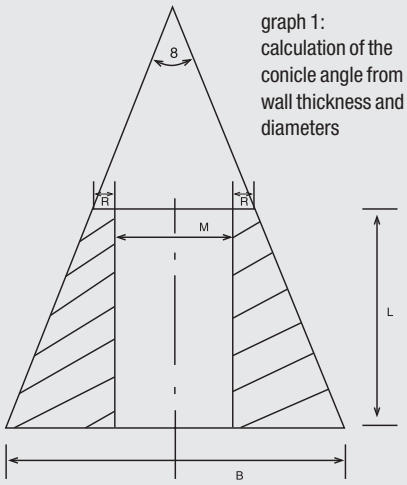
By this the appropriate abutment for each indication with the demanded material can be found. [4, 5, 6]

Because of practical experience the technical investigation could be avoided for the definite abutments. Based on the constructive data the resulting conicle angle and the maximal compensation for divergence could be calculated by a mathematical formula. For this the manufacturer provided all informa-

Maximum conicle angle

$$\gamma = \arctan \frac{B-(M+2R)}{2L}$$

γ = conicle angle
B = lower diameter
L = residual height
M = inside diameter of the screw channel
R = residual wall thicknes



graph 1:
calculation of the conicle angle from height, wall thickness and the diameters

tions: drawings, data tables and diameters of each abutment.

_Results

EstheticBase

The following maximum values are determined by the calculation: for the straight single abutment with the largest diameter (D6.5) the result is 46.8°. The angulated EstheticBase Abutment has a maximum divergence compensation of 38.6°.

For two and more implants the result increases to 93.6° for the straight and up to 77.2° for the angulated abutment. In connection to a natural tooth (ideal preparation of 6°) the angle is 54.8° for a straight abutment and 44.6° for an angled abutment (Figure 3).[7,8]

Telescopic Abutment

For the most substantial abutment of titanium (telescopic abutment) a maximum conicle angle of 64.7° is calculated by modification on the implant D6.5 for single crowns. The remaining overall height of 3.0 mm and the wall thickness of 0.3 mm must be regarded (Table 4, Figure 4).

Data for calculation of the Esthetic Base A0/GH1

	D3.4	D3.8	D4.5	D5.5	D6.5
B	3.4 mm	3.8 mm	4.3 mm	4.5 mm	5.4 mm
L	3.0 mm	3.0 mm	3.0 mm	3.0 mm	3.0 mm
R	0.3 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm
γ	11.4°	19°	28°	31.6°	46.8°

γ = conicle angle
L = residual height
R = residual wall thickness, minimal
B = lower diameter
A = angulation [°]
GH = gingiva-height [mm]

Data for calculation of the Esthetic Base A15/GH1

	D3.4	D3.8	D4.5	D5.5	D6.5
B	3.0 mm	3.6 mm	3.9 mm	4.1 mm	4.9 mm
L	3.0 mm	3.0 mm	3.0 mm	3.0 mm	3.0 mm
R	0.15 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm
γ	9.6°	15.2°	20.8°	24.4°	38.6°

γ = conicle angle
L = residual height
R = residual wall thickness, minimal
B = lower diameter
A = angulation [°]
GH = gingiva-height [mm]

Data for calculation of the telescopic abutment

	D3.4	D3.8	D4.5	D5.5	D6.5
B	3.8 mm		5.2 mm		6.9 mm
L	3.0 mm		3.0 mm		3.0 mm
R	0.3 mm		0.3 mm		0.3 mm
γ	5.8°		17.2°		30.4°

B = lower diameter
γ = conicle angle
L = residual height
γ = residual wall thickness,minimal

Fig. 3_ The angulated EstheticBase abutment for the diameter 4.5 can be recognized by it´s colour. The destincitve restorative margin and the cylindric, hexagonic retention pin are important. The abutment can be used for single crowns and bridges.

Fig. 4_ The solid Telescopic Abutment made of titanium must be shortened intensively and tapered for individualizing. For the grinding of titaniums a special cross-linked tool is used (Bredent, Leimen, Germany).

Maximum compensation for divergence (γ) by abutment modification for the Telescopic Abutment (Titanium)

	Original height	R = 3.0		Original height	R = 3.0	
	X	X	*	Y	Y	*
D3.4	5.8°	13.3°	11.4°	11.6°	26.6°	22.8°
D4.5	17.2°	38.6°	31.6°	34.4°	77.2°	63.2°
D6.5	30.4°	64.7°	59.1°	60.8°	129.4°	98.2

R = min. residual height 3.0 [mm] W = min. wall thickness 0.3 [mm] * W = 0.5 [mm] γ = conicle angle [°]
X = 1 implant Y = 2 and more implants

Table 4

CeraBase

For the substantial and broad ceramic abutment made of alumina (CeraBase) a maximum divergence compensation of 41.6° for single crowns on the D6.5-implant is possible caused by less shortening (remaining height 5.0 mm) and by greater remaining wall thickness (0.7 mm).

For the anatomically formed CeraBase abutment conicle angles between 8.4° to 8.8° (D5.5/D6.5) and a residual height of 3.9 mm (D6.5) to 4.1 mm (D4.5) are calculated. The entire original height is larger (5.3–5.9 mm). However it is not usable for the achievement of a larger conicle angle, because the margin cannot be changed. Because of this CeraBase abutments for D3.0-implants are not available (Figure 5, Table 5 and 6).[10]

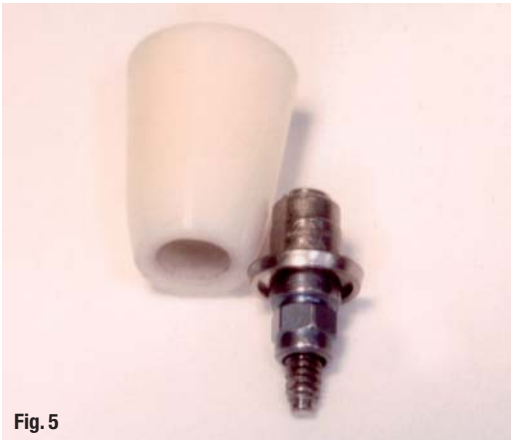


Fig. 5

Fig. 5_ The broad CeraBase blank consists of two parts: a titanium core for retention in the implant and a ceramic coverage with reverse, unphysiological conicle angle. Both parts are connected by gluing. The individualized abutment serves as core for a cementable full ceramic crown and/or to direct veneering of a screw retained crown. This grinding can be realized i.e. by the CeraBase Tool Set (Friadent, Mannheim, Germany).

Data for calculation of the CeraBase coverage Broad					
	D3.4	**D3.8**	**D4.5**	**D5.5**	**D6.5**
B	5.4 mm	5.4 mm	6.0 mm	7.0 mm	7.9 mm
L	6.8 mm	6.8 mm	6.8 mm	6.8 mm	6.8 mm
R	0.7 mm	0.7 mm	0.7 mm	0.7 mm	0.7 mm
γ	29.6°	29.6°	43,0°	64.6°	83.2°

γ = conicle angle R = residual wall thickness, minimal
L = residual height B = lower diameter

Data for calculation of the CeraBase coverage Anatom					
	D3.4	**D3.8**	**D4.5**	**D5.5**	**D6.5**
B	4.1 mm	4.1 mm	4.1 mm	4.1 mm	4.1 mm
L	5.3 mm	5.3 mm	5.5 mm	5.9 mm	5.9 mm
R	0.7 mm	0.7 mm	0.7 mm	0.7 mm	0.7 mm
γ	17.2°	17.2°	16.8°	17.4°	17.6°

γ = conicle angle R = residual wall thickness, minimal
L = residual height B = lower diameter

MP Abutment

For the MP insert the conicle angle is 30°. Due to the small overall height of only 2.0 mm a very large divergence compensation arises as a result of the unchanged and unchangeable original abutment. Because of that the necessity follows to tighten the screw with high strength (24 Ncm). That means that the greatest part of the chewing force must be carried by the abutment screw. A calculation is not sensible (Figure 6).

Maximum compensation for divergence (γ) by abutment modification for the broad ceramic abutment (Cerabase)

	R = 5.0 X	R = 5.0 Y
D 3.4	14.8°	29.6°
D 4.5	21.5°	43.0°
D 6.5	41.6°	83.2°

R = min. residual height 5.0 [mm] W = min. wall thickness 0,7 [mm] X = 1 implant Y = 2 and more implants γ = conicle angle [°]

Table 5

Table 6

Maximum compensation for divergence (γ) by abutment modification for the anatomically prefabricated ceramic abutment (*CeraBase anatom*)

	X	Y
D 3.4	8.6°	17.2°
D 4.5	8.4°	16.8°
D 6.5	8.8°	17.6°

γ = conicle angle [°] W = min. wall thickness 0.7 [mm] X = 1 implant Y = 2 and more implants

Fig. 6_ The MP Abutment consists of the insert and the insert screw for anchorage in the implant. The crown can be screwed from occlusal (Classic).

Fig. 7_ The blank of the unchanged AuroBase Abutment can be shortened and reduced very intensively. The space maintainer of plastic is burned out or cast to.

Fig. 8_ The ball-attachment permits an articulated retention of lower prostheses on four interforaminal implants.

Xive TG

The same capacity of divergence compensation results for the one-piece Xive TG implant, in which the MP abutment is integrated for transgingival healing with immediate loading by means of a bar. Therefore no calculation is accomplished.

AuroBase

For the burnout or cast-to abutment AuroBase the divergence compensation by shortening and reducing the walls of a given form of a definite material is avoided, because this is realised by the individual modellation and cast of a new abutment.[3,11] The result of the practical application test is a maximum conicle angle of 40° (Figure 7).

Ball attachment

Maximally tolerable divergence between implants of 15° are indicated by the manufacturer for this component for the anchorage of coverdentures. The individualizing of the attachments is not possible. A calculation is not necessary (Figure 8).

_Discussion

In literature there are only few practical usable references about the individualization of each abutment. They refer mainly to esthetic reasons for individualizing. That means to increase the thickness of the buccal veneering and to change the abutment´s margin into a subgingival position. For the abutment with the modellation height 6, which procedes to the EstheticBase – abutment it was mentioned: "... the adjustment to indi-

Explanation of Tables and Abbreviations

GH = height of gingiva [mm]	X = 1 loaded implant
MH = height of modellation [mm]	Y = 2 or more used implants
D = diameter [mm]	
MP = multi-purpose, multi-implant	γ = conicle angle [°]
R = minimal remaining height [mm]	I = straight
w = minimal thickness of the abutment´s wall [mm]	II = angulated
TG = trans gingival	A = angulation

vidual oral conditions of the patient... by the fact that the technician prepares the abutments and puts the edge of crown there, where it is not visible... ". However it is emphasized that "the dentist can make this also in the patient´s mouth, because in both cases the original abutment has to be customized". [12]

"The grinding and individualizing of the abutments are possible". [13]

The "production of an individualized abutment for a single crown of single tap" is only mentioned. [14]

"Concerning the full ceramic abutments Ivory [predecessor of the CeraBase] one implements: "... abutments of ceramic(s) can be prepared. This makes possible the most extensive adjustment possible to the prosthetic situation, angulation, gingival conture and color". [15]

Implant divergence and its compensation is not recognized as a frequent prosthetical task. Maybe the danger of abutment loosening and screw fracture is the reason for this. The investigation into the full-ceramic abutment of alumina for single crowns (CeraBase) shows an advantage in comparison to zircon oxide: "Chew-physiologically sufficient maximum strength, long-term stability and technical treatment without risk." [16]

The accomplished prosthetical application tests and examinations refer to materials longer present at the market. A new abutment of zircon oxide could improve the data of the ceramic abutment and changes them similar to those of titanium.

Some past components aren't any longer recommended. The sealing ring Hermetics belongs to the EstheticBase and AuroBase-abutments and is an important contribution for the sealing of the implant internal thread. [17]

The platform switch is not represented any longer for all abutments, but exact recommendations are delivered: D3.8 with D4.5; D5.5 with D6.5. The EstheticBase abutment with the diameter 6.5 will not be produced any more, because these are used too rarely. The MP Abutment is only offered in one form, with which the abutment is fastened with its own screw in the insert screw. The abutment CeraBase anatom is taken away from the market.

_Summary

By the adaptation of the calculation method from engineering to prosthodontics the maximum capacity of divergence compensation could be evaluated. Furthermore it avoids practial trials of dentist and technician to determine the maximum individualization.

_Acknowledgements

I would like to thank DENTSPLY Friadent company for providing implants, abutments and construction details.

I thank civil engeneer Dipl. Ing. (FH) Bernhard Leicht, Niederfüllbach, Germany, for mathematical support.

For technical consultation I thank Mr Ralf Wolf, head dental technician, Coburg, Germany._

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_contact implants

Michael Pampel, Dr med dent
Specialist for Oral Implantology
Private Praxis, Ketschendorfer Str. 24
96450 Coburg, Germany
E-mail: praxis@dr-pampel.de
Web: www.dr-pampel.de

Animal experimental study of the healing of endosteal implants with vacuum titanium spray and calcium phosphate coating

author_ Rainer Lutz, Safwan Srour, Peter Kessler, Emeka Nkenke, Karl Andreas Schlegel, Germany

_Dental implants are often the only possibility for incorporating a functional denture in patients with marked jaw atrophy or following cancer surgery of the oral cavity. A crucial factor for the success of endosteal implants is the degree of bone deposition on the implant. This is considerably influenced by the bone density in the local tissue. The cortex is thinner in the maxilla compared with the mandible and the cancellous pattern is finer.[51] Long-term clinical and experimental investigations have demonstrated statistically significantly that the success rate of implants is much poorer in the maxilla compared with the mandible.[61]

The long-term success of oral endosteal implants requires both osseointegration and a permanent close bond with the soft tissues. This biological behaviour is influenced to a very great extent by the surfaces of the introduced biomaterials, as characterised by the macro-, micro- and nanostructure, along with the chemical composition.[19] When the implant site is of good bone quality and the patient is healthy, treatment with oral endosteal implants has a high rate of long-term success[2,11,19] so that this form of therapy is now regarded as a scientifically accepted part of dental-management.[17] Since the introduction of oral endosteal implants, an unloaded healing period of three to six months has become established, depending on the quality of the implant bed. Modified surface structures, which enable osseointegration to be accelerated, might contribute to the early functional loading capacity and are therefore an important aspect of clinical research. The possible influence of the surface on the long-term success of oral endosteal implants is apparent when the surfaces of failed explanted implants are examined.[45] Apart from modification of implant insertion, modified surfaces are recommended in difficult implant sites in augmented or very spongy bone and are provided by manufacturers.[54] Scientific investigation to detect a positive correlation between certain surface characteristics and healing behaviour and the time the implants remain in place in vivo is so far lacking.[54] Because of the greater fracture strength with a simultaneously relatively low weight and excellent corrosion resistance, and because of the spontaneous formation of a passivating oxide layer, titanium has become established as a material for implants. Although the exact mechanism of the bone-titanium

Fig. 1_ Diagram of the bone-implant contact regions.
Fig. 2_ Example of analysis of BIC (bone-implant contact) using the Bioquant method.

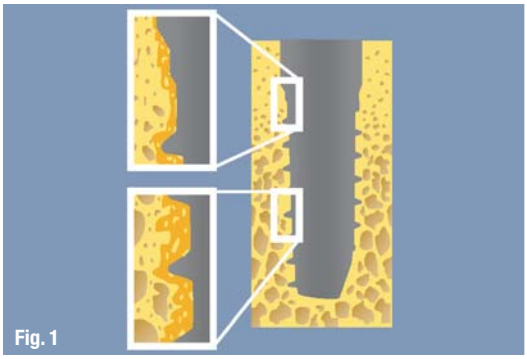


Fig. 1

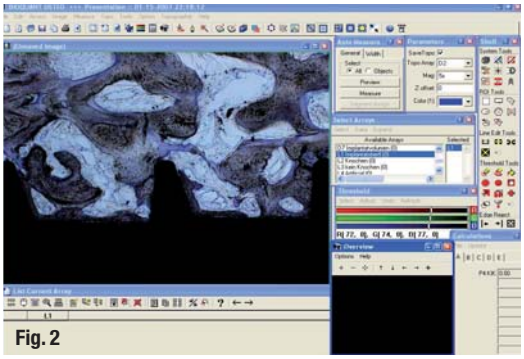


Fig. 2

bond has not yet been fully explained, it can be assumed that the titanium oxide layer has a decisive influence on bony healing and epithelial adhesion.[33] Implant healing can be further improved by modifications of their surface structure[3,4,11,14,15,20,25,37,38,60] and advantages including earlier loading can be achieved by topographical changes.[10,21,36,40,45,46]

At every implantation there is initially adsorption of proteins, platelets and other macromolecules to the implant surface.[44,29] Osseointegration of the implants takes place through the "conditioning film" of this protein layer.[7,49] Cytokines released at the implant surface (mitogens and morphogens) play an important part in attracting osteogenic cells, which colonise the implant surface as osteoblasts and through this process, which takes place immediately after implantation, they enable contact osteogenesis of the implants to take place.[23,24,44] The direct contact between the bone and the implant correlates significantly with its surface. The surface structure appears to be more important than an increase in diameter.[1, 3,11,13,25,26,33,39,50,60]

The precise mechanisms are not known at present but previous authors have suggested that the choice of implant material and its surface structure has a profound influence on erythrocyte agglomeration[44] and on the number and degree of activation of the platelets.[32,42,43] It has been shown that platelet adhesion takes place through GPIIb/IIIa integrin binding to fibrinogen, which is adsorbed on the implant surface.[6] The implant surface structure thus has a fundamental influence on osteoconduction not only because of the development of a concentration gradient for chemotactic cytokines and growth factors through the degree of platelet activation but it also represents a fixation surface for a threedimensional biological matrix, along which cells can migrate to the implant surface. The bone remodelling cascade can be divided into a multistage process.[16] First, differentiating osteogenic cells secrete a collagen-free organic matrix[57], which provides germ centres for calcium phosphate mineralisation. Beginning in these germ centres, crystal growth and the formation of a collagen fibre scaffolding take place. Finally, the collagen scaffolding is mineralised. The newly formed collagen-containing bone is separated from the implant surface by a layer of collagen-free calcified tissue. Formation of this layer can be simulated by a calcium phosphate coating. In contrast to uncoated metal oxide surfaces, this adsorbs more proteins on its surface. It can be assumed that greater platelet activation and thus faster peri-implant wound healing takes place because of the increased binding of fibrinogen. In addition, faster formation of the three-dimensional matrix with accelerated cell migration to the implant surface can take place because of the increased protein adsorption. The calcium phosphate coating used in our experimental design consists mainly of brushite ($CaHPO_4 \times 2\,H_2O$) with traces of hydroxyapatite and it is applied to the implant surface by an electrochemical process. Brushite is one of the most soluble calcium phosphate phases and is converted to hydroxyapatite in aqueous solutions.[34] In vitro the coating demonstrated highly promising osteoblast activation.[5] Osteoconductive properties were found in vivo.[50] In this study, the healing of differently coated alphatech® implants (FMZ GmbH Henry Schein Dental Depot Langen) with VTPS, VTPS + Bonit® and BONITex® coating was investigated in 24 domestic pigs. The adult domestic pig was chosen as experimental animal as it is particularly suitable for studies of bone healing and bone remodelling. Tissue perfusion, circulatory processes and fracture healing are very similar to conditions in humans. The bone new production rates in adult pigs correlate closely with those in humans (pigs: 1.2–1.5 µm/d; humans 1.0–1.5 µm/d). The pig is therefore regarded as a very reliable model with regard to meaningfulness, reproducibility and applicability of experimental results.[35]

_Material and methods

After the animal study was approved by the relevant animal experiment committee of the Mittel-

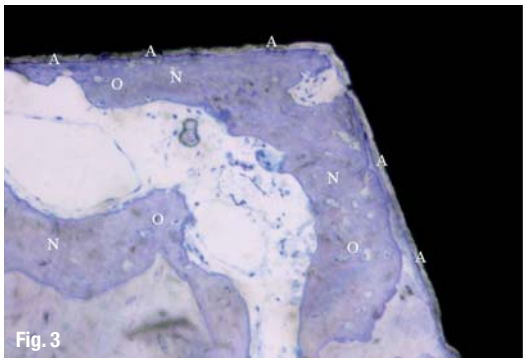


Fig. 3

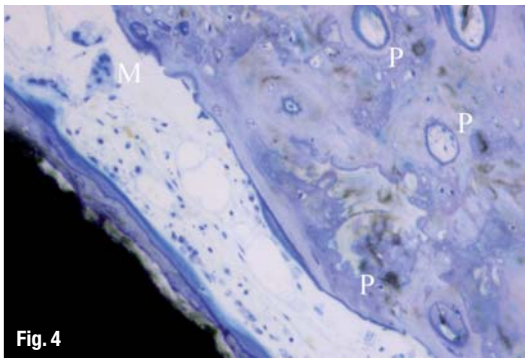


Fig. 4

Fig. 3_ Histology of the Bonitex® surface 21 days postoperatively, 400x magnification (N = newly formed bone, O = osteocytes, A = artificial gap due to specimen preparation).
Fig. 4_ Histology of the VTPS surface 30 days postoperatively, 400x magnification (M = macrophage, P = separated particle).

franken government, Ansbach, Germany (animal experiment proposal 54-2531.31-7/06), 24 pigs were included in the study. The following study groups were formed:

1. VTPS group (vacuum titanium plasma spray)

Pure titanium was sprayed on the implant surface in an argon gas atmosphere under negative pressure conditions.

2. BONITex® group

Following previous Hydroxyapatite radiation and acid etching of the implant surface, the implants were coated by means of an electrochemical process in an aqueous solution containing calcium and phosphate ions. This coating was approx. 2 µm thick and consists of the two calcium phosphate phases Hydroxyapatite and Brushite (~ 5% HA, ~ 95 % Brushite).

3. VTPS + Bonit® group

Pure titanium layer in combination with an approx. 15 µm layer of electrochemically deposited CaP (~5 % HA, ~ 95 % Brushite).

_Nature, method and duration of the procedures

For all surgical procedures, the animals were anaesthetised by an intravenous injection of Ketamine HCl (Ketavets, Ratiopharm, Ulm, Germany). Following application of a local anaesthetic in the frontal region of the skull (Ultracain DS forte, Hoechst GmbH, Frankfurt/Main, Germany), a sagittal incision was made and the soft tissue and periosteum were mobilised. Three implants each per experimental group were then inserted randomly. Three animals were available for each experimental time. Nine implants were placed in each animal, and these were inserted in the skull according to a randomised selection process. Therefore, a total of nine implants could be followed up per group and experiment time.

On the first three days postoperatively, the animals were given streptomycin (0.5 g/day; Grünenthal GmbH, Stolberg, Germany) to reduce the risk of infection. Finally, the periosteum and skin were closed over the defects with absorbable Vicryl sutures (Vicryl® 3.0; Vicryl® 1.0; Ethicon GmbH & Co. KG, Norderstedt, Germany). The animals were sacrificed to obtain the samples after the planned healing time of the implants was reached after 3, 7, 14, 21, 30, 56 and 84 days and after six months.

_Removal and processing of the specimens

The animals' frontal bones were removed and the samples were fixed with 1.4 % Paraformaldehyde solution to render the organic matrix insoluble. The samples were then dehydrated at room temperature in an ascending alcohol series in a dehydration unit (Shandon Citadel 1000, Shandon GmbH, Frankfurt/Main, Germany). Xylol was used for intermediate fixation. The samples were then embedded in Technovit 9100® (Heraeus Kulzer, Wehrheim, Germany).

_Histology

The thin sections were then reduced to 30 µm and stained with toluidine blue O solution. The stained sections could then be examined light microscopically. The samples were inputted into a Pentium 5 computer by a Zeiss light microscope (Axio Imager A1; Zeiss, Jena, Germany) with a video camera. The boneimplant contact was then determined in the histological sections using Bioquant Osteo® software. This was followed by histopathological analysis of the samples.

_Statistics

Each histology sample was analysed by two investigators and the values for each sample were aggregated. A two-sided t-test was subsequently performed for verification. A significant difference in the compared results was assumed at $p < 0.05$.

Fig. 5_ Histology of the Bonitex® surface 30 days postoperatively, 100x magnification.
Fig. 6_ Histology of the Bonitex® surface 180 days postoperatively, 100x magnification.

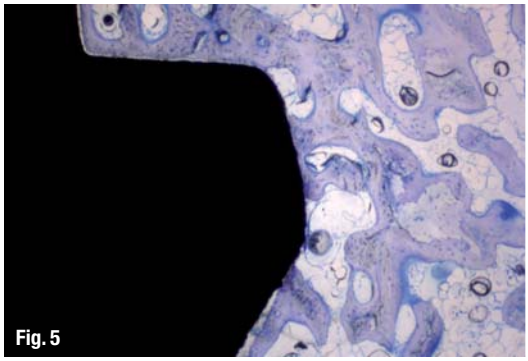


Fig. 5

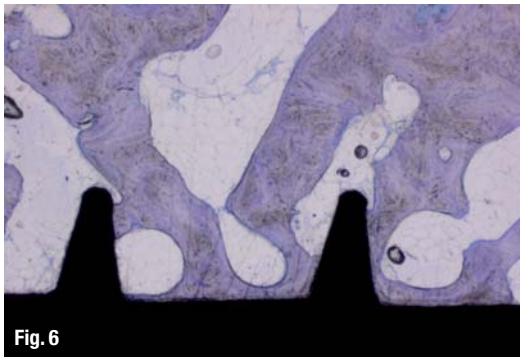


Fig. 6

_Results

The bone-implant contact (BIC) was determined as shown diagrammatically in Figure 1. The bone marrow contains not only mesenchymal precursor cells, which can differentiate into osteoblasts, but also shows high perfusion, which provides osteoclast precursor cells and also cells for neoangiogenesis. Cancellous bone therefore has a much higher remodelling rate than cortical bone. That is why much more marked effects of the different implant coatings can be expected in this region between the individual groups and also over time. To ensure successful osseointegration and long-term stability of the implants, contact osteogenesis of the implants is required. This requires osteoblasts to be deposited on the implant surface right at the start of the peri-implant bone remodelling. The results of the analysis of the bone-implant contact are shown in Table 1 as mean and standard deviation. There were major differences with regard to bone-implant contact. After seven days, boneimplant contact was significantly increased in the VTPS + Bonit® group compared to the Bonitex® and VTPS group ($p = 0.025$ and $p = 0.0081$). In the period between 14 and 30 days, significantly increased values ($p = 0.0018$ and $p = 0$) were demonstrated in the Bonitex® group (86.53% + 8.55; 83.42% + 14.26; 87.96% + 7.90) compared with the other two groups. The results obtained here are well above the average results described in the literature and are in the region described by Schwarz et al. in 2007 for the modified SLA surface after 12 weeks.[47] Over the further course of time, the values of the bone-implant contact in the framework of the bone remodelling became similar between the individual experimental groups and averaged 51.8 %.

_Discussion

In animal studies of bone regeneration, the choice of an animal model with the best possible analogy to the patient is crucial for applying experimental data to practice. This requirement was met by the chosen model. The pig's skull consists of desmal bone, with cortical and cancellous parts, and is particularly good for investigations in the area of implantology because of its resemblance to human bone with regard to bone healing and bone remodelling.[35]

The implants were all inserted according to the manufacturer's operation protocol. By securely covering the implants with the skin of the head, the risk of post-operative bacterial contamination in the form of peri-implantitis was reduced to a minimum and thus corresponded to the closed healing mode. According to Heimke et al.[27], a definitive conclusion on the behaviour of trabecular bone around implants can only be drawn in absolutely load-free models in order to rule out the influence of different loads on bone remodelling. This was the case in our experimental model because the extraoral location of the implants provided primary stability of the inserted implants. This also minimised the risk of micromovements during the healing period. The implants with Bonitex® coating in particular showed high bone-implant contact rates in the cancellous bone at the early times, between 14 and 30 days (see Fig. 4). This result is in agreement with the results of other studies which also report significantly increased bone-implant contact or an improved ability to bridge peri-implant gaps in investigations of calcium phosphate-coated im-

Table 1_ Summary of the results of bone-implant contact.

Observation period	Coating	Bone-implant contact (%)
3 days	VTPS	42.17±20.24
	BONITex®	24.06±14.66
	VTPS+ BONIT®	25.98±17.62
7 days	VTPS	20.23±9.99
	BONITex®	19.63±6.86
	VTPS+ BONIT®	73.15±21.08
14 days	VTPS	56.09±18.04
	BONITex®	86.53±8.55
	VTPS+ BONIT®	26.54±18.79
21 days	VTPS	61.92±14.03
	BONITex®	83.42±14.26
	VTPS+ BONIT®	53.79±30.46
30 days	VTPS	74.70±23.80
	BONITex®	87.96±7.90
	VTPS+ BONIT®	60.47±19.41
56 days	VTPS	46.48±8.71
	BONITex®	54.73±5.36
	VTPS+ BONIT®	44.50±13.33
84 days	VTPS	55.42±11.61
	BONITex®	54.57±17.29
	VTPS+ BONIT®	41.63±13.79
180 days	VTPS	68.55±20.16
	BONITex®	49.11±18.17
	VTPS+ BONIT®	51.49±24.87

plants.[8,12,27,30,31,48,52,53,56,58] Calcium phosphate coatings that are applied by plasma spray and have a thickness of 50 to 100 µm often demonstrate mechanically induced microfractures, as a result of which there are increased signs of degradation and resulting unfavourable tissue reactions after separation of the coating material.[41] In recent years there has therefore been a switch to reducing the thickness of the calcium phosphate coatings and thus selecting an approach that corresponds more to bone biology. The Bonitex® coating has a markedly reduced thickness of approx. 2 µm. As a result, the biological advantages of osteoconduction, cell attraction and improved attachment for the extracellular matrix can be utilised. The fate of the calcium phosphate coatings in vivo has not been adequately elucidated. At a neutral pH, the dissolution of the coating in vitro depends especially on phase composition and the crystallinity and crystal size of the coating.[55] In the subsequent course the unloaded implants with Bonitex® coating showed bone-implant contact rates during bone remodelling that were similar to the values described in the literature. The implants with VTPS and VTPS + Bonit® coating showed bone-implant contact rates during the investigated period as described in the literature. The VTPS coating can be regarded as standard. However, the chemical composition can alter in the course of the healing process. Because of this and because of an acid environment during the early period, the lifetime of the calcium phosphate coating can be impaired in vivo. In the present study, isolated parts of the coating were observed in the peri-implant bone. However, negative effects of degradation of the coating were not found. Nagano et al. did not find a negative influence on the peri-implant bone after degradation of calcium phosphate coatings either.[41]

_Conclusion

Accelerated implant healing with markedly increased bone-implant contact rates was found in the group with Bonitex® coating between just 14 and 30 days. On the basis of these results, early loading of these implants after 30 days and the effect on bone remodelling would be interesting subjects for research. The possibility of very early functional loading could be evaluated, which would allow markedly faster functional and also aesthetic patient rehabilitation.

_Acknowledgement

We would like to thank Prof. Dr. Dr. Karl Donath, Wiehenstr. 73, 32289 Rödinghausen, Germany, for his assistance in the histopathological analysis._

The article was first published in Dentale Implantologie, Flohr Verlag, November 2007.

The literature list can be requested from the editorial office.

_contact implants

Erlangen University Clinic
Department of Maxillofacial Surgery
(Director: Prof Dr Dr F. W. Neukam)
Associate Professor Dr Dr Karl Andreas Schlegel
Glückstraße 11
91054 Erlangen
Germany

Interdisciplinary restoration of anterior teeth

Aplasia of teeth 12 and 22

author_ Klaus Haselhuhn, Germany

_Case report


Fig. 11

Fig. 1


Fig. 2

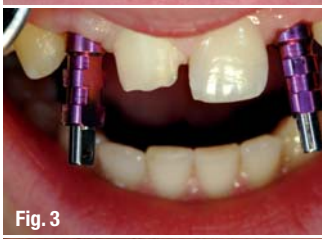


Fig. 3


Fig. 4

Fig. 1_ Post-operative orthopantograph. (Photo: Dr. Marc Hannemüller, Hamburg, Germany)
Fig. 2_ Status prior to impression-taking – gingiva formers in situ.
Fig. 3_ Impression posts in situ, preparation 11.
Fig. 4_ The locking pin is easily removed.

Fig. 11_ The final results after placing all-ceramic crowns on teeth 12 and 22.

_Just how important interdisciplinary cooperation between orthodontists, oral surgeons and prosthodontists is becomes especially apparent when treating tooth-bounded gaps resulting from aplasia. The case described here suffers from aplasia of the upper lateral incisors.

From the orthodontic point of view, it was decided against closing the gap at an early stage in favour of an interdisciplinary implant-supported restoration later on. As the orthodontist, oral surgeon, prosthodontist and dental technician had been working together for many years, the implant-supported restoration could be fabricated consistently. The outcome: a restoration with "red/white" aesthetics which the patient considered really satisfactory.

During the orthodontic procedures, the gaps were kept open. Once bone growth had ceased, which was verified with a wrist bone X-ray, the implant-supported restoration could be commenced. The diagnostic wax-up was used for planning the implant position three-dimensionally. The implant-supported restoration was fabricated using the "IQ:NECT" screw-free implant system of Heraeus Kulzer GmbH, Germany.

_Case documentation

The following case documentation demonstrates the differences between this screw-free connector and conventional implant systems. The new connector technology, involving the patented clip mechanism, and its close orientation to prosthetic requirements is especially advantageous for operators and technicians. It allows for straightforward and widely customised restorations.

_Preoperative condition

The 20-year-old patient presented requesting that the two anterior gaps at positions 12 and 22 be restored and the general aesthetics enhanced. Due to the deep overbite, it would have been very difficult to provide an alternative type of restoration using adhesive bridgework. The clinical and radiological findings indicated agenesis of teeth 12 and 22, conservatively treated dentition and an insufficiently restored incisal edge on tooth 11.

The patient's case history was inconspicuous apart from anterior tooth trauma. The gaps were measured to ensure adequate width for implant restorations. The implants were placed at Dr Hannemüller's oral surgery practice in Hamburg, Germany. The im-

plant-supported restorations were fabricated at the Dental Prosthetics Department of the University of Aachen, Germany.

_Recovery

The implants were allowed to heal submerged for 6 months prior to being recovered using the tubed flap technique. This allowed the labial mucous membrane to increase in thickness. The gingiva formers were customised to ensure ideal conditioning and stabilisation of the peri-implant soft tissues.

During the healing phase, frequent replacement or loosening of the gingiva formers, as is the case with some screw-retained systems, should be avoided. When using the IQ:NECT screw-free system, the gingiva formers are secured with a click mechanism: the components can be heard and felt to click into the implant body—rather like a snap fastener. It is not until the final impression is taken that the gingiva formers are released using the IQ:Lift and replaced with the impression posts. No screws whatsoever are used for retention (Figs. 1 and 2).

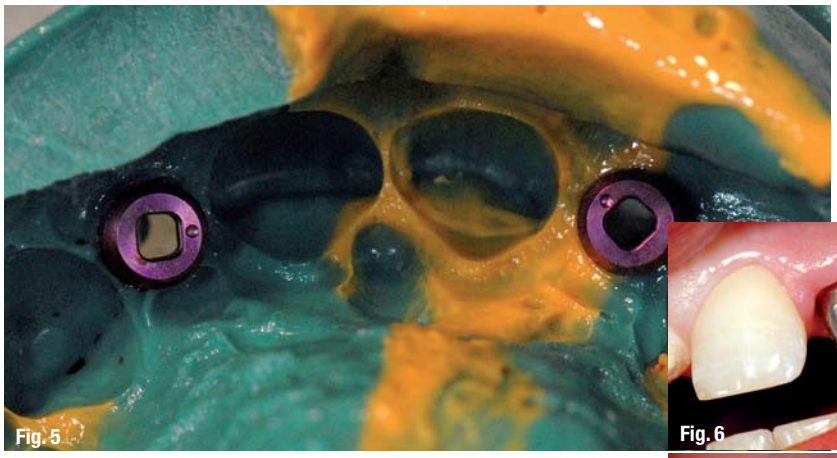


Fig. 5

Fig. 6


Fig. 7


Fig. 8


Fig. 9


Fig. 10

Fig. 5_ One-step putty-wash impression (P2, Light and Heavy) with impression posts.
Fig. 6 and 7_ The customised abutments during the try-in.
Fig. 8_ The dispensing aids and paper points.
Fig. 9 and 10_ The cementation procedure: Applying the predispensed cement (9), placing the abutments (10).

_Preparation and impression-taking

After exposing the defect, the labial surface of tooth 11 was prepared by 0.3 mm for a laminate veneer and a deep chamfer placed around the palatal margin. Once the gingiva formers had been removed with the IQ:Lift the impression posts were inserted at implant level for the pick-up technique (Fig. 3).

Figure 3 shows the undulating incisal contours of the preparation and the two-part impression posts which are clicked into the implants with locking pins. No X-ray is required for checking the fit as the "click" is only heard when the impression post fits the implant shoulder without leaving a gap. The non-parallel implant axes, particularly in the region of tooth 22, have no adverse affect on the quality of the impression as, due to the newly designed connector geometry, the impression posts rest on the shoulders of the implants. After removing the locking pins (Fig. 4), the impression posts are easily removed from the implants. The Polyether P2 one-step putty-wash impression was also easily withdrawn from the mouth (Fig. 5).The green, heavy body P2 Impression material (Heraeus Kulzer GmbH, Germany) is well suited for fixing the impression posts securely in place. The slender margins prepared for the veneers can be recorded even more accurately using the low viscosity, light body material. The stress-free connector technique used with the IQ:NECT system and the precisely matched properties of the impression material combine to enable the special tray to be easily removed from the mouth.

_Dental technology

The trapezoidal interior contours of the implant body ensure positive fixation of all IQ:NECT parts. Dots on the implant body and basal surface of the impression post ensure correct alignment. This provides for unproblematic alignment and perfect positioning. The dental technician uses the locking pin to secure the implant analogue and can fabricate a master model with a gingival mask. The abutments are customised to form preparations for the crowns.

The dental technician can trim the abutments to suit the amount of space available and the angles of convergence/divergence without having to fear weakening the structure due to a screw aperture. He is free to position and contour the abutment as required for an optimum emergence profile and for the crown material in use. This facilitates the restoration of sophisticated anterior teeth in particular.

In this case, preparation took approx. 15 minutes per abutment. The superstructures were fabricated from zircon oxide using conventional crown and bridge techniques. The laminate veneer was pressed using IPS-Empress.

Time-consuming screw connectors with defined torque values are no longer required if the implant abutments are placed in the patient's mouth and checked for correct positioning and contouring (Fig. 6 and 7). The final stage prior to cementation of the abutments and crowns involved trying in the entire restoration for evaluating the contours, shade and functioning. The shade of the crowns had to be adjusted slightly.

_Cementing the abutments

A further speciality of the IQ:NECT system of Heraeus Kulzer GmbH, Germany, involves the definitive cementation of the abutments without leaving excess cement. An exactly predispensed amount of "IQ:NECT Cem" cement is placed inside the implant with a special applicator. The abutment is then inserted into the implant body. As the amount of cement is predispensed exactly, no excess remains.

Dispensing aids are plugged onto the implants in readiness for cementation. They stabilise and displace the marginal gingiva as well as guiding the cement applicator. The central apertures allow the interior of the implant to be dried with paper points after rinsing with NaCl (Fig. 8).

Following this, the activated two-part Bis-GMA-based cement (IQ:NECT Cem) is dispensed exactly with the applicator, the dispensing aid removed and the customised abutment placed stress-free (Fig. 9 and 10). The processing time of eight minutes allows adequate time for cementing the abutments. Following this, the crowns were placed with zinc-phosphate cement.

Within 20 minutes IQ:NECT cement hardens to 60 percent of the final value of approx. 900 Newtons.

Unlike when adhering the porcelain veneers, no rubber dam was placed for cementing the implant abutments.

_Conclusion

The specific application of implantological techniques involving many years of cooperation between the orthodontist, oral surgeon, prosthodontist and dental technician is very apparent in the "red and white" aesthetics of the final result (Fig.11).

The article was first published in the Dental Magazin 5/2007, page 28 to 31._

_contact implants

Klinik für Zahnärztliche Prothetik
c/o Dr Klaus Haselhuhn
Universitätsklinikum der RWTH Aachen
Pauwelstraße 30
52057 Aachen, Germany
E-mail: khaselhuhn@ukaachen.de

Immediate implant placement and immediate loading after a complicated tooth extraction

author_ Xavier Vela, Spain

_Introduction

As implant dentistry continues to evolve to meet our patient's demands for aesthetic tooth replacements with minimal downtime or inconvenience, the dental implant industry has responded with new technological advancements and research. For example, the development of enhanced implant surfaces, such as the Osseotite® Dual-Acid-Etched Implant Surface, improved on the results seen with machined surfaced implants. Studies demonstrated long term Cumulative Survival Rates (CSRs) with Osseotite implants in the range of 95% to 98%[1-3] (at five years[4]) which represented an improvement over the CSRs of machined surfaced implants (85% to 95%).[5-6] With these enhanced implant surfaces, clinicians felt confident to perform early loading protocols and to place implants in compromised clinical situations. With multicenter, long term prospective studies and the ten year history of Osseotite, good long term success with negligible periimplant concerns has been demonstrated.[3] With such positive results, why do researchers and the dental implant industry continue to look for advancements in implant surface technology and designs? Implants typically demonstrate good initial primary stability at the time of placement, however, when bone remodels in the first few weeks following implant placement, primary implant stability can degrade with initial bone resorption which in turn might impact the ability to successfully perform immediate loading protocols. To potentially address this concern, new nanotechnology in implant surface topography has been explored. BIOMET 3i has been the first implant company in introducing a nano-textured implant surface, the NanoTite™ obtained by applying nano-scale crystals of calcium phosphate onto the Osseotite surface by using a Discrete Crystalline Deposition (DCD™) Process. This process creates a more complex surface topography which renders it a Bone Bonding® surface by the interlocking of the newly formed cement line matrix of bone with the implant surface. The result: a more rapid bone formation with improved bone-to-implant contact (BIC) as demonstrated in animal studies and human histology.[7,8] What is the significance of these findings in clinical practice? Clinicians can immediately load the implants, reduce the time to loading and treat more patients even in compromised clinical situations, such as poor bone quality, limited bone quantity, or in grafted sites.

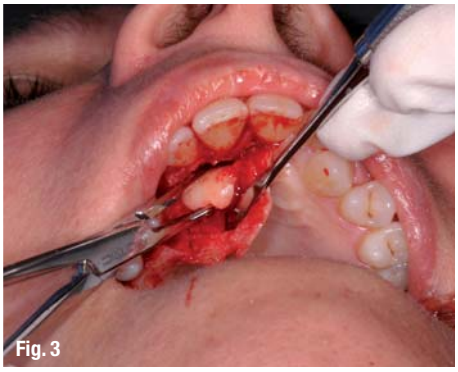
_What about Crestal Bone Preservation?

Preservation of crestal bone has proven to be critical for long term implant success. This is especially true in the anterior aesthetic zone for support of the peri-implant soft tissues, as well as in areas

Fig. 1 and 2_ Initial situation: caries destruction of upper milk canine and included canine underneath.
Fig. 3 and 4:_ Extraction of the milk and the included canines.


Fig. 1


Fig. 2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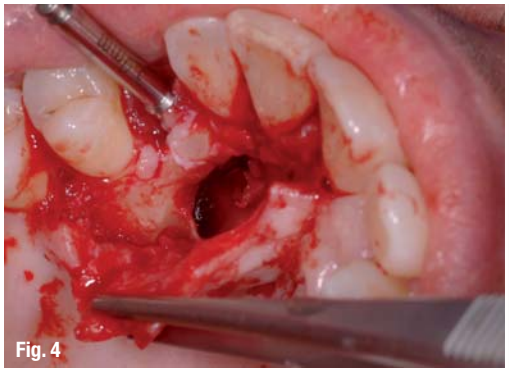


Fig. 4

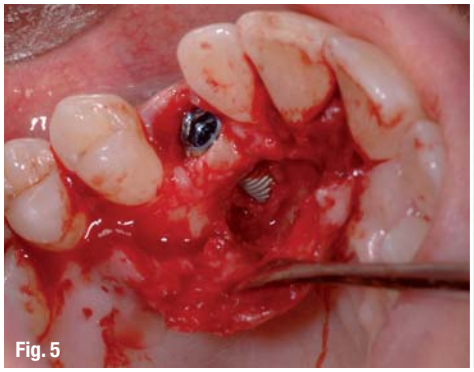


Fig. 5

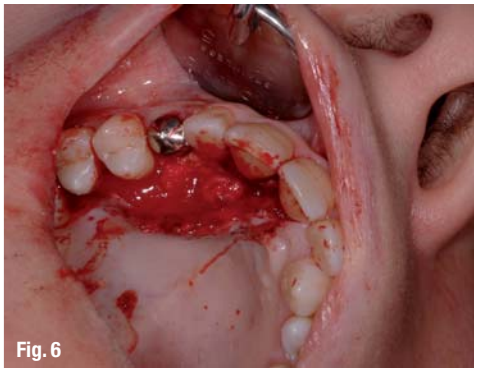


Fig. 6

Fig. 5 and 6_ Implant in final position with palatal bone grafting.

of limited bone height so as to maximize bone-to-implant contact. One new implant design available today, such as the NanoTite™ Prevail® Implant, has built in platform switching with the surface treatment to the top of the implant collar at the medialization point, creating a continuous bone loading surface allowing for this crestal bone preservation.[9-11] This implant has been designed with straight and expanded collar configurations. The straight collar configuration is ideally suited for sites with limited restorative space, such as missing maxillary lateral incisors or mandibular anteriors. The expanded collar configuration was used in the following clinical case, and is indicated for sites where engagement of the crestal cortical plate of bone is required to achieve a high level of primary stability.

_Case presentation

A 45 years old female patient presented with the upper right milk canine (tooth 53) affected by caries, which has caused an important occlusal and distal destruction and pulpar necrosis (Fig. 1).

The radiographic examination revealed an included final canine (tooth 13), (Fig. 2) and a minimum root support of the milk canine but no presence of periapical defects. The patient desired a fast and aesthetic restoration of the affected tooth.

The exploration revealed a preserved buccal bone plate which allowed for the extraction of the included canine and immediate placement of a dental implant with immediate non-occlusal loading with a temporary crown, which would last for four months until the final crown would be inserted.

On the day of the surgery, the extraction of the milk and the included canines was made after an intra-sulcular palatal incision from the first upper premolar to the central incisor to allow for a good visibility of the area to treat. The extraction of the canine required a previous osteotomy and the section of the tooth. The socket walls and bone defect were debrided before initiating the drilling for the implant placement (Fig. 3 and 4).

After a meticulous drilling sequence, a NanoTite™ Prevail® Certain® implant 4 mm in diameter and 13 mm in length (Biomet *3i*, Inc.) was slowly inserted with the drill unit at 40 Ncm torque maintaining the direction of the osteotomy (Fig. 7 and 8). This implant thanks to its expanded collar shape is ideal to seal the access to the alveolus, achieve optimal coronal stability and preserve the crestal bone thanks to the integrated "platform switching". The palatal bone defect is filled with the bone chips collected from the drilling in a bone filter (Fig. 6).

A 5 mm emergence profile impression coping is placed and the tissues are sutured around it (Fig. 7). Then an impression is made and sent to the laboratory for the fabrication of the provisional crown while in mouth left a healing abutment of the same size.

Fig. 7_ Impression making for the provisional restoration.
Fig. 8_ Provisional crown in place.
Fig. 9_ Initial periapical radiograph.


Fig. 7


Fig. 8


Fig. 9


Fig. 10


Fig. 11


Fig. 12

The following day the out-of occlusion provisional crown made with a titanium hexed provisional UCLA cylinder (Biomet *3i*) and resin is inserted and the access hole closed with light-curing composite (Fermit) Fig. 8. A periapical radiograph for crestal bone levels control is taken Fig.9.

The patient came back for periodic controls after one, two months and four months after provisional crown insertion Fig. 14.

At the fourth month control the provisional crown was retrieved observing the ideal emergence profile created Fig. 11. Then a final impression was made and sent to the laboratory for the final crown production.

A month later, at five months from implant insertion the final screw-retained porcelain-fused-to-metal crown made from a machined gold alloy Certain UCLA cylinder (Biomet *3i*) was inserted. Fig.12. A periapical radiograph was taken to control the interproximal bone levels which showed less than 0.5 mm bone remodelling mesially and no bone remodelling distally.

One month later, after six months of implant insertion the patient came back for control. We can observe in Figure 14 that the small defect in the distal papilla has been corrected during this time, mainly thanks to the respected maximum distance between the interproximal bone crest and the contact point of the crowns. After one year from tooth extraction and implant placement the patient showed an optimal aesthetic results with the papillas fully covering the interproximal spaces, a full bone regeneration of the palatal defect and optimal crestal bone preservation Fig. 15.

_Summary

As demonstrated in the clinical case the new implant designs available today with the nano-textured implant surface allows to replace lost teeth immediately and place a provisional restoration also immediately even in complicated tooth extractions which require bone grafting at the same time. Thanks among other factors to the platform switching included in the coronal implant macro design the peri-implant crestal bone and thus the optimal aesthetic result obtained can be preserved over time._

The Literature list can be requested from the editorial office.

_contact implants

Dr Xavier Vela
Barcelona Osseointegration Research Group (BORG)
Barcelona, Spain
E-mail: borgroup@borgroup.net
Phone: +34-93-8675822

Fig. 10_ Control after four months.
Fig. 11_ Soft tissues after provisional crown retrieval.
Fig 12 and 13_ Final crown insertion and radiograph at five months.

Fig. 14_ Healing after six months.
Fig. 15_ Final result after one year.

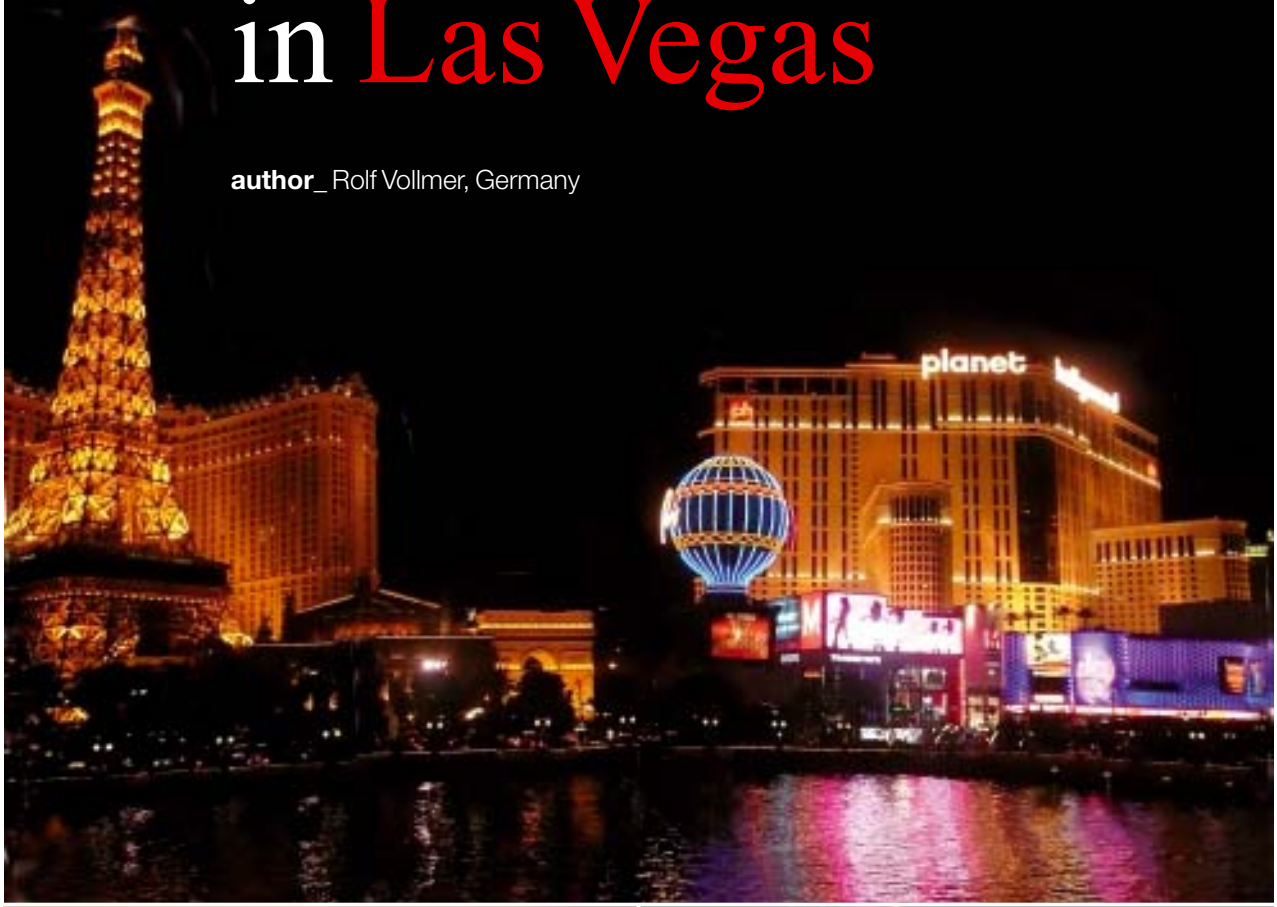

Fig. 13

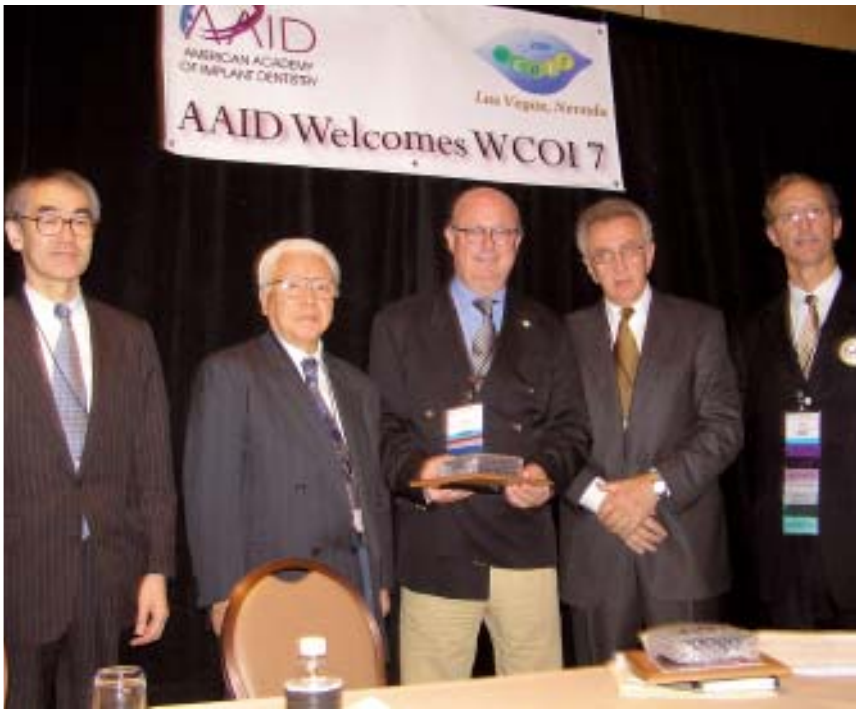

Fig. 14


Fig. 15

56th Annual AAID Conference in Las Vegas

author_ Rolf Vollmer, Germany





_The annual AAID conference was held from November 7 through 11, 2007 in the Rio Suites Hotel in Las Vegas, Nevada. The well-attended conference also provided the setting for the annual change of presidents, where current president Dr Frank LaMar handed the presidency over to Dr Jaime Lozada. The World Congress Symposium of Oral Implantology took place simultaneously to the AAID conference. Outstanding clinicians with scientific research were included in the program and presented state-of-the-art treatment options and alternative therapies. The DGZI was further represented by fellow board members Dr Rainer Valentin and Dr Rolf Vollmer. Together with the head of the Oral Biological Department at the University of Bonn, Prof Dr Werner Götz, they discussed their respective current experience and research relating to block grafts. The DGZI's Austrian partner association, the GIGIP, was represented by Prof DDr Kurt Vinzenz, who presented impressive grafts and aesthetic restoration options. In homage to this year's conference title, "Excellence through Evidence-Based Implant Dentistry", first-class speakers from the world over offered presentations. The list of speakers included founding fathers of implantology such as Leonard Linkow, Carl Misch, Philip Boyne, Sascha Jovanovic, Michael A. Pikos, Andre Saadoun, Henry and Maurice Salama, Dennis P. Tarnow, and O. Hilt Tatum as well as others such as Peter Wöhrle. Sascha Jovanovic explained how to attain optimal biological and clinical results using suitable implant insertions, particularly focusing on preserving hard and soft tissue following dental extractions. The presentations main fo-

cus was on understanding methods for attaining natural implant aesthetics and included an accompanying discussion of the importance of adequate implant design and construction. Dr Dennis Tarnow employed a range of examples to demonstrate the situations in which it makes sense to save a tooth and when it makes sense to extract it, particularly within the aesthetic zone. Andre P. Saadoun, renowned for his outstanding aesthetic restorations, explained various methods for implant insertions with closed and non-closed periimplant endosseous healing as well as for the use of one-stage and two-stage im plants. Leonard Linkow looked back over 50 years of successful implantology and followed implantology—originally belittled as little more than "voodoo science"—from its beginnings to its current state. Carl Misch presented a ten-year retrospective on how an efficient implantological process can lead to prosthetic success and particularly focused on prosthetic upper construction design, the role of exacerbating factors, bone density, the most important implant positions, implant number, implant size, existing bones, and implant design. Stimulating discussions followed all presentations. The presidents reception and celebration event was held the same evening and included both a ceremony and gala dinner. The 57th AAID Annual Meeting in San Diego from October 29 through November 2, 2008, has been announced and will be held under the motto "Beyond Boundaries—Featuring Interactive Live Surgeries" to which we extend a warm welcome to both our German and international friends!_

1,200 Attend the AIAI Conference in Sendai/Japan

DGZI's Japanese partner association celebrates continued success

author_ Roland Hille, Germany

This year's AIAI Conference in Japan was a great success with nearly 1,200 participants attending the international event held in the metropolis Sendai, situated two hours north of Tokyo.

The convention center—with its vast auditoriums and exceptional conference technology—is located on the 7th floor of a shopping center. AIAI president Dr Yasuhiko Takemae, conference president Dr Suzuki, and Prof Hayashi from the Kanagawa Dental College in Yokohama proved superb conference hosts. In his opening speech, president Dr Takemae particularly highlighted the importance of collaboration with the DGZI. To honor this partnership, the AIAI, which has around 1,000 members, has founded a DGZI Japan Section. Only three months after its launch, this section already boasts over 100 members. Dr Takemae also emphasized the importance of scientific exchange between the two partner associations for the Japanese members, who hold German dentistry standards, especially in the field of oral implantology, in high regard. The DGZI was represented by vice president Dr Roland Hille, who discussed the opportunities and risks of aesthetic implantology in a 90-minute speech. The Japanese members expressed their intense interest in this multifaceted field of oral implantology during a post-discussion session. Other European speakers included Dr Ashok Sethi/London and Dr Karl-Ludwig Ackermann/Filderstadt, who both provided an overview of the current state of European oral implantology. The presentation given by the DGZI's international president Dr Mazen Tamimi/Jordan was met with an equally high level of audience interest. Dr Tamimi described the various activities of the DGZI, particularly focusing on postgraduate education and advanced training. The Japanese members are very interested in utilizing the DGZI's vast experience and in adopting the extremely successful educational design, exemplified by Prof Hayashi's goal of implementing the first implantology curriculum in Japan at a private university in Yokohama. At present, this type of postgraduate education isn't offered anywhere in Japan. Meanwhile, the Japanese members acknowledged the potential of improving implantological treatment through rigorous professional training and consequently raising standards significantly. Dr Hille and Dr Tamimi also lectured at the private university in Yokohama within the collegiate education and postgraduate program. 20 Japanese members successfully passed the "Expert Implantology DGZI" examination during their attendance at the 37th International Annual Conference in Dusseldorf, and further examinations were held in Sendai. All attendees at the AIAI conference in Japan were met with warm hospitality, and there was an exceedingly positive overall attitude toward the DGZI, which bodes well for continued successful collaboration and scientific exchange for years to come.

Ma assalaama Dubai, God dag Stockholm

DGZI draws a positive balance on FDI world conference

author_ Daniel Zimmermann & Claudia Salwiczek, Germany

_**Understanding oral hygiene** as a component of general preventative health care—this is how FDI President Michèle Aerden summarised the recently ended World Dental Congress in Dubai. This is an essential understanding if one hopes to lastingly improve and promote oral health, Aerden told the international press on the last day of the congress. The Belgian-born president also passed on her post to the newly elected Canadian Dr Burton Conrod, who will preside over the world federation for the next two years. Dr Conrod announced that continuity can be expected during his term, as well as structural changes to improve communication between the world federation and its member associations. The World Dental Federation (FDI) has been in existence since 1900 and holds its conference each year in a different city. Recent locations include Montreal and Shenzhen, China. This year, in Dubai, the conference was held for the first time in an Arab country. The United Arab Emirates and Dubai, in particular, boast extremely modern medical facilities. Statistically, however, only one attending dentist is available for every 4,900 inhabitants, whereas in Germany this ratio is currently closer to 1 dentist for every 1,200 inhabitants, according to the World Health Organization (WHO). The organisers were successful in creating an interesting and diversified scientific programme. Seventy-five local and international professionals held lectures under the title 'Dental Diversity in the Land of Tomorrow'. Among the speakers

were familiar names like Dr Hien Ngo of Singapore, as well as Dr John Thomas and Dr Robert Schneider from the USA. Adrian Lussi of Switzerland spoke in a series on the topics of 'Erosion, gum disease and hypersensitivity'. The hall was filled to the last seat for many of the lectures and presentations. Preparations are already well underway for the next world conference, which will be held at the end of September 2008 in Stockholm. In Dubai, at a reception of the Swedish board of dentists, the delegates were encouraged to commit to the conference to be held in the Swedish capital. The Swedish ambassador to the United Arab Emirates, Bruno Beijer, was also present at the reception. 'Many dentists from Scandinavia regularly attend the FDI conferences', Dr Roland Svensson, chairman of the local organisational office, said. 'That's why Stockholm is the perfect place to host this internationally recognised event for dentistry. The city has a lot to offer'. After the Swedish capital, the conference will migrate to Singapore in 2009, followed by Brazil in 2010. Satisfaction was also expressed in Dubai about the industry's active participation. The dental industry once again presented a wide range of currently available products for dentists and laboratories. Implantation solutions, the latest generation of digital X-ray devices and new and improved materials for preventative dental care took centre stage. With over 300 exhibitors from the region and abroad this event was one of the largest in the federation's history, according to FDI. 'The conference will have a positive influence on dentistry in the entire region as well on the quality standards of future conferences taking place here', Friedrich Herbst, general manager of International Dental Manufacturers (idm), concluded on a positive note. Dr Rolf Vollmer, first vice president and treasurer of the German Association of Dental Implantology (DGZI) draws a postive conclusion from the congress: "Since the DGZI is already very active in the Middle and Far East, it made sense to establish a presence here, as well. In particular the national and international continuing education courses were of great interest. The professionally designed booth contributed to the good presentation of the DGZI."

More information about the world conference in Dubai can be found at our website www.uptodayte.com as well as at the official FDI website www.fdiworldental.org, where a tentative programme for the conference in Stockholm is also available for download._

Focused on your practice success: 13th DENTSPLY Friadent World Symposium 2008 in Berlin

_**"Focused on your practice success"** is the slogan of the 13th DENTSPLY Friadent World Symposium 2008. The world of implantology will meet in Berlin on April 18 and 19 under the scientific committee of Dr. David Garber, USA, Professor Adriano Piattelli, Italy, and Professor Lin Ye, China. More than 2,000 delegates from all over the world will be given the opportunity of experiencing interesting innovations and practical concepts, and discussing how to implement them successfully into everyday work in the dental practice. Numerous interesting presentations will be offered and delegates will be able to participate interactively. To round off the high-quality scientific program an exciting evening event will take place in one of the most unusual in-locations in the cultural metropolis of Berlin.

_The symposium will focus on your practice success

In addition to the latest innovations and interesting implantology presentations on the most current topics such as long-term preservation of hard tissue and soft tissue, handling particularly challenging cases or computer-supported treatment planning, case studies of proven and new surgical and prosthetic treatment protocols and successful long-term studies will be presented. The major focus will be on the options for successful establishment of your own implantology practice. Delegates will be given the opportunity of taking an active part in controversial panel discussions on topics such as "Periodontal therapy versus implantology" and "Guided Surgery—True progress or complete hype" and to vote by televoting. A higlight of the symposium will be the transmission of a computer-guided live surgery using the ExpertEase guided surgery system. Delegates will see in real-time how accurate, safe and predictable a perfect treatment result can be with the virtual treatment planning and implant placement with innovative surgical guides and the easy-to-use drill system. Successful practice communication will be presented in an entertaining format using the Harry Potter novels in "A chamber of secrets: Communication with assistants and patients".

_New Symposium highlight in 2008: Lunch and Learn

Two parallel midday sessions for delegates will be offered for the first time. On April 18 "East meets West" will focus on speakers from Eastern Europe and their remarkable success with modern implantology. On both days of the Symposium in the "Forum Young Implantologists" young presenters from the DENTSPLY Friadent p3 development program will discuss how to make a successful start in implantology. This will be particularly interesting for beginners in implantology. At midday on Saturday selected poster presenters will discuss their work in short presentations "From the poster walk to the podium."

_User information and supporting young implantologists live

In addition to the scientific offerings, delegates will have the opportunity to try out the latest innovations from DENTSPLY Friadent live and discuss questions with the DENTSPLY Friadent product experts. They will be able to exchange experiences with colleagues active in implantology all over the world and discuss important topics with internationally renowned lecturers in the Expert Lounge. Those interested can test computer-supported implant planning on the computer with ExpertEase or go on the Internet to find out more about the stepps practice marketing platform. DENTSPLY Friadent will be supporting student implantologists and encouraging the implementation of innovative ideas in the everyday dental practice with the award of a prize for the best student poster on the poster walk—the exhibition of scientific posters.

_Highlight of the first day

The cultural highlight of the 13th DENTSPLY Friadent World Symposium 2008 will take place in one of the most unusual in-locations in Berlin. Celebrate with fine food and enjoy the entertainment with artists like Della Miles and Szenario at "The Station", a former parcel post office.

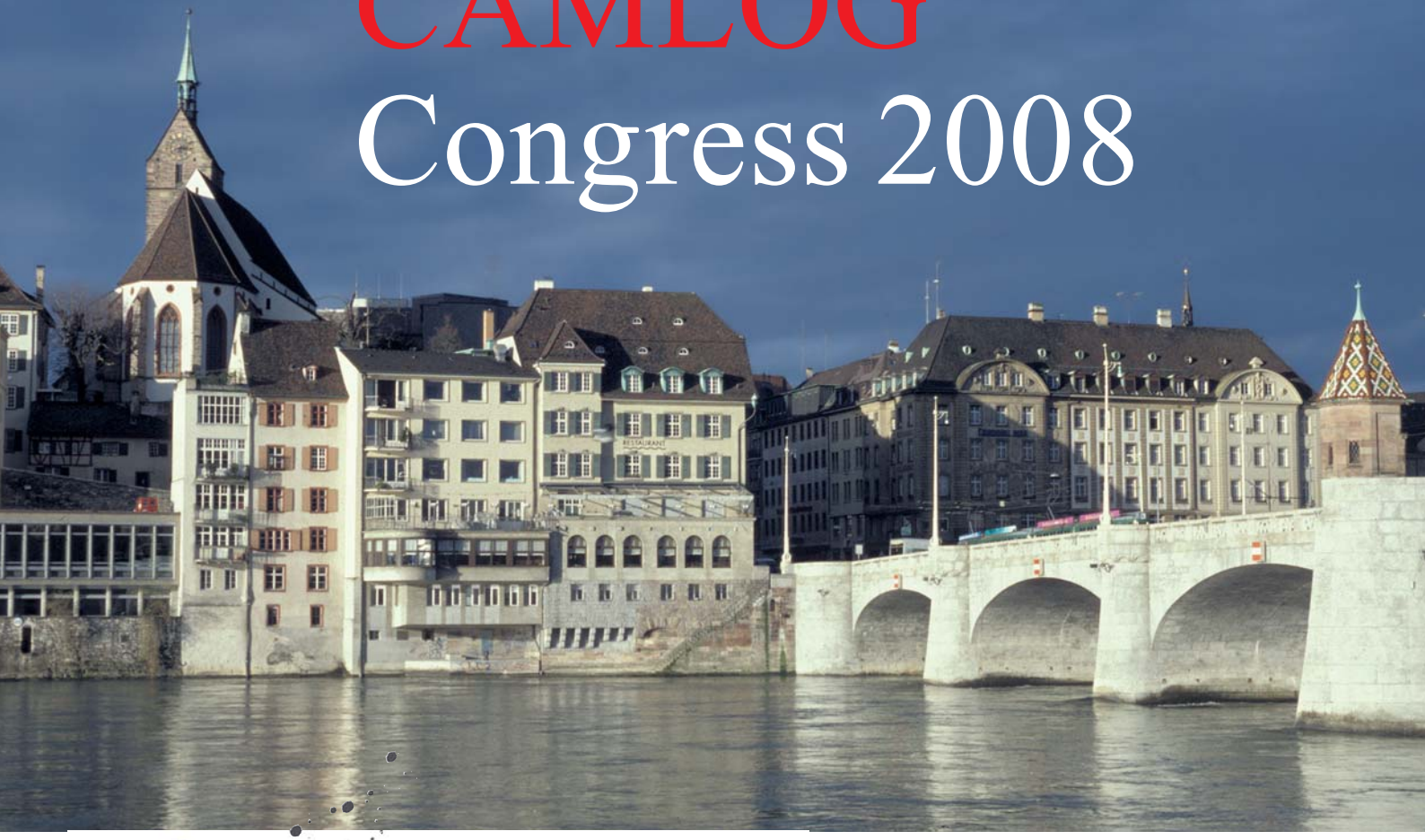
_Information and registration

See www.friadent.com for the program. Register online at www.friadent.com, and take advantage of the early-bird discount. _

_contact implants

DENTSPLY Friadent
Steinzeugstraße 50
68229 Mannheim, Germany
E-mail: info@friadent.de
www.friadent.com

International CAMLOG Congress 2008



CAMLOG Implant Festival Basel

_"Science meets practice—practice meets science."

This will be the theme of the International CAMLOG Conference 2008. On May 9–10, the Congress Center Basle will be the venue for this meeting of experts from clinics, dental offices, and dental laboratories. The congress topics will cover the entire spectrum of implant dentistry, which has become a mature and beneficial therapy, that is experiencing increasing demand from an ever better informed patient clientele.

Some of the topics of the congress program presented by internationally renowned speakers include:

_ Guidelines and risk factors in implant therapy
_ Clinical relevance of the implantology "hardware"
_ Aspects of pink/white esthetics
_ Immediate loading/immediate restoration
_ The team approach key to implantological success
_ Marketing as a profiling tool for private dental practice
_ Call for entries for the camlog foundation Research Award 2009.

The International CAMLOG Conference 2008 will include presentations on 3-D imaging methods to aid implant position planning as well as template-guided implant bed preparation and implant insertion. Such techniques will contribute increasingly in the future towards acquiring greater certainty in the planning, prognosis, execution, and reproducibility of implant treatments.

The detailed conference program and online registration form are available at: www.camlogfoundation.org and www.camlog.com._

Selected Events 2008

MARCH 2008

March 4–6	*UAE International Dental Conference & Arab Dental Exhibition – AEEDC® Dubai*	Dubai, UAE	Web: www.aeedc.com
March 7–8	*4th Arab-German Implantology Meeting*	Dubai, UAE	E-Mail: office@dgzi-info.de

APRIL 2008

April 4–6	*IDEM*	Singapore	Web: www.idem-singapore.com

MAY 2008

May 23–24	*15th Starters Congress in Implantology / 9th Spring Meeting of DGZI*	Ulm, Germany	Phone: +49-3 41/4 84 74-3 08 Fax: +49-3 41/4 84 74-3 90 Web: www.oemus.com

JUNE 2008

June 5–8	*SINO Dental*	Peking, China	Web: www.sinodent.com.cn/eng/
June 19–21	*International Congress of Aesthetic Surgery and Cosmetic Dentistry*	Lindau, Germany	Phone: +49-3 41/4 84 74-3 08 Fax: +49-3 41/4 84 74-3 90 Web: www.oemus.com

SEPTEMBER 2008

September 24–27	*FDI Annual World Dental Congress*	Stockholm, Sweden	Web: www.fdiworldental.org

OCTOBER 2008

October 10–11	*38th International Congress of DGZI*	Bremen, Germany	Phone: +49-3 41/4 84 74-3 08 Fax: +49-3 41/4 84 74-3 90 Web: www.oemus.com
October 29–November 2	*AAID 57th Annual Meeting*	San Diego, California	Web: www.aaid.com

NOVEMBER 2008

November 25–29	*GNYDM Greater New York Dental Meeting*	New York, USA	Web: www.gnydm.com



Dr Friedhelm Heinemann Unanimously Elected DGZI President for Three More Years

_**On November 24, 2007,** the general meeting of the German Association of Dental Implantology (DGZI) unanimously voted to retain Dr. Friedhelm Heinemann/Morsbach and Dr. Winand Olivier/Bottrop in their respective posts as president and head of continuing education. The board presented an impressive report of accomplishments achieved during the past legislative period.

President Heinemann highlighted increased national and international DGZI acceptance and outstanding non-commercial collaboration with national and international partners. Especially in recent years, this collaboration has been broadened immensely. Today, the DGZI is working together with members of academia and industry alike and can boast highly satisfied members, exemplified by a steady and, indeed, increasing number of members.

On the basis of the positive results the DGZI board now continues on its course to further successful work in the interest of its members and for the benefit of implantology._

Congratulations and Happy Birthday to all DGZI-members around the world

85th Birthday
Dr Karl-Heinz Diesslin (05.01.)

80th Birthday
Rolf Schütt (21.02.)

75th Birthday
Siegfried Krämer (12.01)
Dr Dr Heinz-Jürgen Brähler (31.01.)

70th Birthday
Dr Klaus Musebrink (09.02.)

65th Birthday
Dr Björn Ole Finkenhagen Westby (18.01.)
Prof Vasile Burlui (18.02.)
Jochen Schmidt (23.02.)

60th Birthday
Dr Rainer Brandt (27.01.)
Dr Ivan Tresnak (01.02.)
Dr Manfred Schmid (10.02.)
Dr Hans-Joachim Habermehl (29.02.)

55th Birthday
Heinz-Otto Lück (16.01.)
Dr Walter Müller (18.01.)
Dr Francis Mutajuka (18.01.)
Dr Ralf Begand (19.01.)
Dr Kurt Esswein (24.01.)
Dr Stefan Fleisz (25.01.)
Dr Alfred Blenk (06.02.)
Dr Dr Rainer Boersting (18.02.)

50th Birthday
Dr Jürgen Kohler (05.01.)
Dr Ulrich Teichert (10.01.)
Peter Kolb(22.01.)
Dr Dr Elisabeth Kah (24.01.)
Dr Walter Hofmann (25.01.)
Dr Boris Ksendsowski (27.01.)
Dr Roland Hadermann (31.01.)
Dr Andre Schmitz (03.02.)
Dr Matthias Bergeest (05.02.)
Daniel-Jakob Müller (13.02.)
Dr Rosvita Rausenberg (20.02.)
Dr Siegbert Schreiber (27.02.)

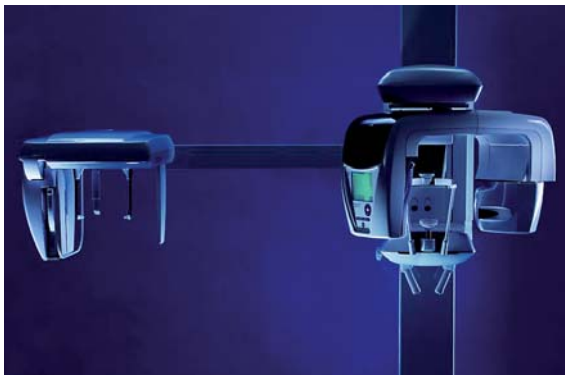
45th Birthday
Dr Bernd Gebhardt (02.01.)
Dr Ute Gleiß (06.01.)
Dr Michale Astfalk (13.01.)
Dr Kai Kröll (25.01.)
Dr Gerhard Werling (31.01.)
Dr Dr Eduard Keese (31.01.)
Dr Hazim Jemahl (31.01.)
Dr Martina Vollmer (03.02.)
Axel Quint (08.02.)
Dr Reinhard Geib (16.02.)
Liviu Dorian Gold (20.02)
Dr Marcus Nowak (20.02.)
Dr Thomas Borgste (23.02.)
Dr Wolfgang Hiltscher (27.02.)

40th Birthday
Dr Solveig Kühnast (07.01.)
Dr Birgitt Brockels (17.01.)
Jens Fritz (21.01.)
Dr Mounir Benalsdallah (22.01.)
Dr Thomas Busch (31.01.)
Dr Oliver Adolphs (01.02.)
Lale Eimermacher (03.02.)
Robert Keller (06.02.)
Dr Christoph Sautré (16.02.)
Ruth Bender (18.02.)
Marcus Moghadam (29.02.)

Manufacturer News

J.Morita Europe

Veraviewepocs 3D: From panoramic to 3D images in just one click



Veraviewepocs 3D: 3D images, panoramic and cephalometric exposures with one unit.

With the new Veraviewepocs 3D X-ray unit, J. Morita Europe promises dentists several benefits at once. Where they previously had to transfer their patients to radiologists to take 3D X-rays, according to the manufacturer's instructions they can now provide this service in their own practice. This improves their diagnostic options and saves the patient time and unnecessary travel. With Veraviewepocs 3D both very high resolution 3D images and real panoramic and cephalometric exposures can be created without having to change the sensor in-between. As a functional unit, the device delivers precise results with the lowest doses of radiation with very few steps. The user creates an OPG exposure which is available immediately on the screen. He can instantly assess whether an additional 3D exposure is indicated and selects the region to be examined by clicking on it with the mouse. The 3D exposure is generated without having to reposition the patient and change the settings. You can select 3D exposures in 40 x 40 mm or 80 x 80 mm formats. In both sizes the details have an equally high resolution and are presented with high image dynamics and without image distortion. Using the accompanying i-Dixel software, the user can, after a short scanning time, study the image data in axial, coronal and sagittal views simultaneously. Taking the exposure is just as user-friendly as with 3D Accuitomo, for example. If you also install the i-Dixel software on other computers in the practice, the three-dimensional exposures can be displayed and edited on each of these computers. If you do not want to use the i-Dixel software, the images can also be viewed with the free software One Data Viewer. Due to the integrated DICOM standard, the exposures can also be exchanged between different information systems. According to J. Morita Europe, Veraviewepocs 3D with its three-dimensional exposures enables structures to be displayed which cannot be recognised using conventional X-ray procedures. Dentists can thus diagnose and treat patients with more confidence and at the same time combine their diagnostics, treatment planning and implementation in one work step.

J. Morita Europe GmbH
Justus-von-Liebig-Straße 27a
63128 Dietzenbach, Germany
E-mail: Info@JMoritaEurope.com
Web: www.JMoritaEurope.com

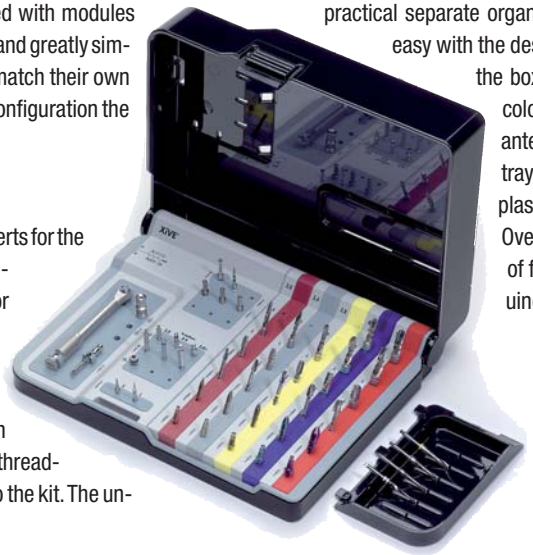
Friadent

New surgical kits from DENTSPLY Friadent

"Our new surgical kits for the XiVE® and ANKYLOS® implant systems are well-designed, clearly laid-out and very attractive," summarizes Birgit Dillmann, Marketing Director of DENTSPLY Friadent. With the reduction in the number of instruments, the surgical cassettes, which can be fitted with modules classified by implant diameter, promise easy handling and greatly simplify surgery. Users can assemble the surgical kit to match their own way of working and add to it at any time. In the basic configuration the new surgical kits can handle almost 80% of cases.

Faster and simpler working

Customized restorations are easy with the modular inserts for the ANKYLOS® and XiVE® implant systems sorted by standard implant diameters. The user guide is designed for the surgical protocols of both systems, which makes working during implant placement easier. The number of implant drivers for XiVE® has been reduced by more than half, because they are now identical for both the ratchet and the contra-angle handpiece. The new thread-cutter is now in one piece and has been integrated into the kit. The uncovery instruments, which consist of hexagonal screwdrivers and an instrument for removing the closure screw, have now been integrated into the ANKYLOS surgical cassettes. The advantage here is that a separate uncovery cassette is no longer required for surgery. The ANKYLOS® surgical kit is available for both manual use and for the motor-driven version.



The design is also new

The attractive glossy black cassettes have a lid that can be removed as well as a practical separate organizer for used instruments. Cleaning is very easy with the design that eliminates edges. The layout inside the box is very simple with the clearly structured, color-coded instrument arrangement and guarantees safe handling in the operating theater. The trays are made of a light and stable sterilizable plastic.

Overall the new surgical kits offer a high degree of flexibility and economy and represent a genuine advance for the dental practice.

Friadent GmbH
Steinzeugstraße 50
68229 Mannheim, Germany
E-mail: info@friadent.de
Web: www.friadent.de

BEGO

Surgical trays made of plastic—Not from BEGO Implant Systems!

Nearly all large dental implant manufacturers are now offering surgical cassettes made of sterilizable plastic material. For the time being, BEGO Implant Systems has decided not to follow that trend but to continue instead of relying on the advantages of high-quality full metal made trays. New from BEGO Implant Systems is the modular tray design for the two implant systems Semados® S and RI. For better user guidance and easier handling, the number of tools has been considerably reduced and rearranged in a more ergonomic fashion. Another feature which distinguishes the new BEGO Implant Systems tray as well as its predecessors from competitor products, is the absence of silicon tool holders on the tray in order to facilitate cleaning and sterilization of the unit. Color codings as well as clear and unambiguous inscriptions minimize errors in tool selection and usage. The high-quality Aesculap® container with reusable filter allows users to store the sterilized cassette for up to 6 months without having to take any further measures. As for drilling tools, BEGO Implant Systems continues to rely on the high-performance instruments from Gebr. Brasseler, Lemgo. With the new surgical kit, the steadily growing user community of BEGO Semados® implants always has a ready-to-use system on hand.
An attractive trade-in program that allows all BEGO users to trade in the predecessor model for a new BEGO modular tray is available.

BEGO Implant Systems GmbH & Co. KG
Technologiepark Universität
Wilhelm-Herbst Straße 1
28359 Bremen, Germany
E-mail: wachendorf@bego.com
Web: www.bego-implantology.com

ziterion

The All-Rounder—zit Implant System

With the introduction of the new, innovative zit-vario[t] Implant at the EAO in Barcelona in autumn 2007, the ziterion GmbH located in Uffenheim/Germany succeeded in meeting the market's demand for the simplification of dental implantology by further developing their implant system. ziterion GmbH is the only implant manufacturer offering three identically designed implant types which are available in two different materials and which furthermore can be handled with one single set of instruments. The identically designed transgingival implants zit-z (of ZrO_2 bioceramics) and zit-t (of titanium), as well as the subgingival hybrid implant zit-vario[t] are compatible also with regard to the prosthetic components. Therefore zit Implants make it possible to cover a wide range of indications in the field of implantological rehabilitation. Besides that, the whole zit Implant System offers full compatibility furnished by one single supplier. Less than 50 system components and only one insertion instrument are needed for the complete range of implants. Nevertheless, the system offers high variability together with high flexibility—no matter whether you decide in favour of a standard treatment or a treatment meeting highest aesthetic demands. The zit Implant System with its innovative high-tech products, being unique in the market, will offer an excellent and cost-efficient solution for any case. Furthermore, ziterion is the first and up to now also the only manufacturer offering compact full-ceramic abutments of zirconia, which are not connected to the implant by means of a central metal screw. Thus, fractures of ceramic abutments are impossible.

ziterion GmbH
Bahnhofstr. 3
97215 Uffenheim, Germany
E-mail: info@ziterion.com
Web: www.ziterion.com

Hader SA

New Hader torque wrench in two versions

Hader SA, employer of 100 people, is a fast growing Swiss company specialised in design, conception and production of high quality parts in the medical-, dental- and micro technical field. We provide our OEM customers worldwide. In order to increase its capacities in the microtechnology field, Hader SA acquired H-Liengme SA, a Swiss company active in high precision components, mainly CNC turning components. Both companies are located in the Swiss Jura Mountains, a highly specialised region and well known for watch making industries and micro technology. We have turning and milling machines in order to produce extremely precise parts.

Moreover we have the capacity to use bars of various materials up to Ø 51mm. Hader SA has injection moulding machines and we produce the moulds in house. Other competences are laser welding, laser marking. For cleaning components after machining process we use a state of the art cleaning system. For examining components and packaging we have a Cleanroom Class US 10,000, type ISO 7 at our disposal. For testing, to carry out metallurgical cross-sections etc. we have a Dental Laboratory. The company is certified ISO 9001:2000, ISO 13485:2003 and ISO 14001:2004. In addition to custom made components by CNC machining and injection moulding, we develop and manufacture dental torque wrenches. The devices with gradually adjustable values are available with torque values up to 70 Ncm: 10–35 Ncm, 15–70 Ncm and our ratchet wrench. All wrenches are surgical instruments and have CE certification. The 70 Ncm torque wrench has been improved and will be available in 2 versions, in a 50 and in a 70 Ncm version.

The 50 Ncm torque wrench has got the same length (see enclosed picture), the 70 Ncm is a bit longer and both have got a calibrator with a bigger diameter.

The advantage for the user is a better readability while determining the couple (calibration and marking possible every 5 Ncm) as well as a higher precision. The 70 Ncm wrench is composed of only 6 parts that can easily be dismantled for cleaning and sterilisation process. According to customer's requirements we make specific laser marking on the handle of the wrench: company logo and specific torque values.

For the 35 Ncm torque wrench a new black laser marking is available to improve readability during operation. Our wrench is equipped with a custom specific ratchet wheel, however it can be applied to any implant system available on the market.

Our medical division developed Torque Tool Limiters which are used for Orthopaedic use from 1–15 Nm.

Hader SA
Rue Jardinière 153
2300 La Chaux de Fonds, Switzerland
E-mail: sales@hader-swiss.com
Web: www.hader-swiss.com

Nobel Biocare

NobelActive™— 3rd Generation Implant Design

Nobel Biocare launches a unique new implant with revolutionary features due to the advanced design of its implant body—NobelActive™. For the clinician, NobelActive™ is indicated for all positions, but is especially effective in regions of diminished bone quality or quantity, due to its bone-condensing capability, capacity for shorter drilling protocols, and ability to change direction on insertion. On the patient side, NobelActive™ offers a solution for difficult treatment situations and provides for quicker treatments, shorter healing times, and less invasive procedures. "It has undergone more than three years of study and has been placed thousands of times, with equal—more often —better results than traditional implants," claims Prof. Nitzan Bichacho, one of the invontors of Nobel-Active™. The complete NobelActive™ design produces a self-drilling, maneuverable, conical implant: a "double corkscrew" form, which often requires less site preparation and minimizes bone and soft tissue trauma. This design also offers trained clinicians the ability to reorient a NobelActive™ implant during insertion, when necessary. All NobelActive™ implants feature TiUnite® on the threads and collars, which produces better osseointegration and Immediate Function™ characteristics. The NobelActive™ system lineup consists of internal and external configurations, in 3.5, 4.3, 5.0 mm implant diameters and 10, 11.5, 13, 15 mm lengths, and are applicable in all indications. The prosthetic platform of all versions is uniformly narrow, ~ 3 mm. NobelActive™ is a sophisticated implant and NobelBiocare recommends that even experienced implant clinicians attend a NobelActive™ training course.

For more information, please visit www.nobelbiocare.com.

Nobel Biocare AB
Box 5190
40226 Gothenburg, Sweden
E-mail: info@nobelbiocare.com
Web: www.nobelbiocare.com

Straumann

Straumann opens branch office in Budapest

Group takes over distribution in Hungary gaining direct access to customers.

Straumann, a global leader in implant, restorative and regenerative dentistry announced today that it has opened a local branch office in Budapest bringing the company closer to Hungarian dental professionals, customers, and patients. At the same time, Straumann has taken over distribution of its products from VaLiD Dental - Medical, which has been its exclusive distribution partner in Hungary since 1998. With a population of 10 million served by approximately 5,000 dentists, Hungary is one of several attractive emerging markets in Eastern Europe and is the first to be served directly by Straumann. Today, Straumann is present in more than 60 countries worldwide, and generates approximately 95% of its total revenues directly, with the remainder coming through distributors.

Straumann GmbH
Magyarországi Fióktelepe
Bank Center, Szabadság tér 7
1054 Budapest, Hungary
E-mail: info.hu@straumann.com
Web: www.straumann.hu

Straumann Holding AG
Peter Merian-Weg 12
4002 Basel, Switzerland
Web: www.straumann.com

CAMLOG

International CAMLOG Congress 2008

In the course of the International CAMLOG Congress 2008 on May 9 and 10 in Basel, internationally renowned speakers from various disciplines of implant dentistry and adjoining fields will present a diversity of topics, that on the one hand will expand the scientific knowledge of the participants and on the other will make a concrete contribution to further improving their day-to-day clinical outcomes.
Organized under the patronage of the camlog foundation, the theme of the Congress is:
"Science meets practice—practice meets science".
This topic addresses foremost the concepts of interdisciplinary cooperation and partnership, that are essential for long-term success in implant dentistry.
Day one of the International CAMLOG Congress 2008 will cover basic scientific matters such as principles of hard and soft tissue healing mechanisms.
The second day will be reserved for aspects of bioengineering, implant and instrument design, and its clinical relevance for implant procedures and related results. Other important issues will be immediate loading and immediate restoration.
With entertainment, music, excellent food and a multitude of opportunities for informal networking, the CAMLOG Party on the evening of the first day will contribute its share to make the Congress an overall success.
The Congress program in detail and online registration possibilities at: www.camlogfoundation.org and www.camlog.com.

CAMLOG Vertriebs GmbH
Maybachstraße 5
71299 Wimsheim
Germany
E-mail: info@camlog.com
Web: www.camlog.com

NSK

SurgicXT plus with illumination

The new SurgicXT Plus from NSK is a smart surgical micromotor with illumination. The SurgicXT Plus is equipped with an automatic torque adjustment (Advanced Torque Calibration, ATC). The micromotor provides optimum visualisation conditions for oralsurgical procedures. To work accurately, the NSK SurgicXT Plus system calibrates the r.p.m. and the torque of the micromotor to match the contra-angle handpiece used, as soon as it is coupled to the micromotor. This ensures the accuracy of the speed and of the torque. The smart, programmable electronic system reacts immediately to user inputs. The SurgicXT Plus can be operated for extended periods without the occurrence of significant overheating phenomena. In addition, it has an ergonomic design which is comfortable in any hand. The new illumination function on the handpiece of the SurgicXT Plus provides good illumination of the work field and facilitates, accelerates and fine-tunes the procedure. The micromotor is the shortest and lightest in its class and has good balance, which prevents fatigue in the hand and the wrist, especially in long, complex procedures. It is perfect for all hand sizes and operates extremely quietly in comparison to other motors. The micromotor has a solid titanium body which explains its light weight and extends its service life. The equation of high power (210 W), high torque (50 N x cm) and the extensive speed selection (200 to 40,000 min^{-1}) provides the flexibility necessary for satisfying all of the requirements of oral-surgical procedures. Every handpiece and contra-angle handpiece has its individual force transmission ratio characteristic, in order to ensure absolutely precise speed and the right torque for complicated oralsurgical procedures. NSK SurgicXT Plus calibrates the micromotor, in order to set the correct force transmission ratio for every contra-angle handpiece for the relevant application. The system provides high speed, precise torque and reliable safety

NSK Europe GmbH
Westerbachstraße 58
60489 Frankfurt/Main, Germany
E-mail: info@nsk-europe.de
Web: www.nsk-europe.de

implants
international magazine of oral implantology