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Exploring new grounds

Dear colleagues,

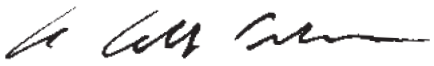
for more than 46 years, further education has been a topic dear to the hearts of DGZI's editorial board. Already since its foundation in 1970, DGZI has contributed considerably to the education of our colleagues, especially by founding the DGZI study groups in 1990. These are small learning groups in which new techniques and case presentations are practiced.

Three years ago, our Young-Generation study group was founded, bringing a breath of fresh air to our learning groups. Starting in Cologne, Germany, and featuring another branch in Hamburg under the leadership of Dr Navid Salehi, who has since become a member of our extended board, the study groups have enriched the DGZI's field of activities. The heads of our study groups, Dr Umut Baysal and Dr Navid Salehi, have been supported by Dr Markus Quitzke in 2015. Their next step will be the foundation of another study group in Germany's capital Berlin, which is going to be led by Rabi Omari.

The foundation of the Berlin study group on 19 March 2016 at the Westin Grand Berlin Hotel surely is a highlight in 2016. Around 100 colleagues attended the founding assembly, illustrating the growing interest of our young colleagues in peer learning. Participants of this event received four further education points and the corresponding certificate.

Wishing you a both exciting and enlightening reading experience of this issue of implants: international magazine of oral implantology!_

Warm regards,



Dr Rolf Vollmer
First Vice President and Treasurer of the German Association of Dental Implantology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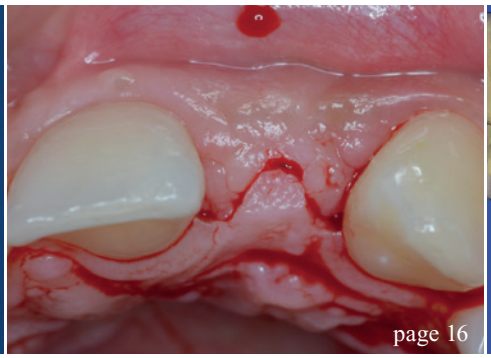
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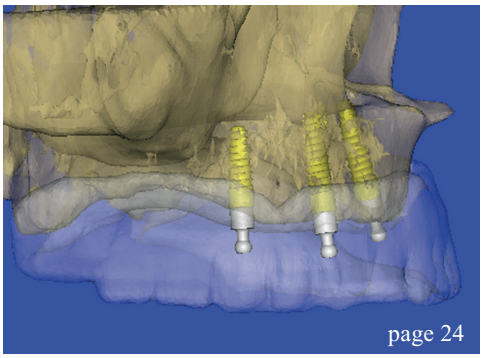
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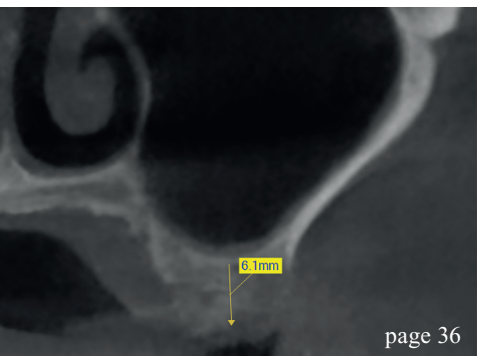

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Basic evaluation of an antimicrobial gel for peri-implantitis treatment

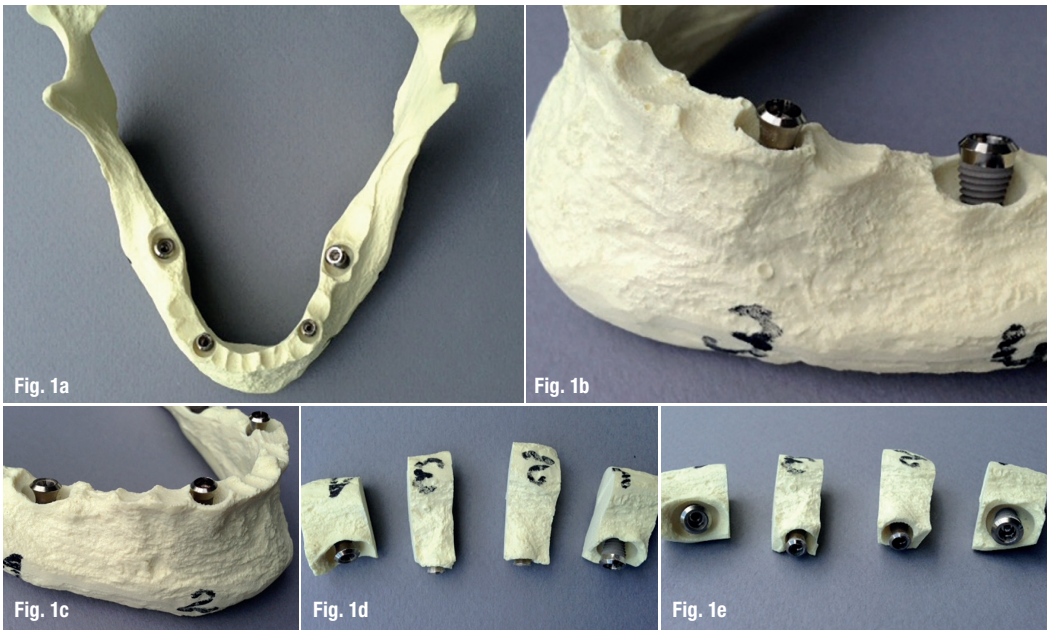
Authors: Dr Georg Bach & Christian Müller, Germany

Introduction

Early complications, which have been regarded as the major dread in the initial phase of oral implantology, have become a rare phenomenon for a fairly long time. Reasons for this positive development can be found in significant improvements of the implant surfaces, improved insertion techniques as well as in new ways to improve the prospective implant site.

Nevertheless, with the enormously increased number of inserted implants, a significant increase of late complications has meanwhile been recorded.[1,4,12] These complications typically manifest themselves many years after installation of the superstructure by means of peri-implant bone loss around artificial tooth pillars.[17,20,21,25] Often associated with an insufficient or declining oral hygiene of the patient, these peri-implant lesions lead to the loss of the artificial tooth pillar and the corresponding suprastructure in case they are not treated.[5,11,13,14] Many authors regard the development of peri-implantitis therapies as one of the current key challenges of implantology.[15,18-20,26]

Cleaning and disinfection of the exposed implant areas represents an undeniable requirement. For the latter step the term "decontamination" has been generally established.[3,16] For decontamination, various methods are indicated for their suitability.[3,6,8,16,21-24] The aim of this study was to evaluate the suitability of using an antimicrobial gel for peri-implantitis treatment in an *in-vitro* experiment.



Figs. 1a–e: Peri-implant defect—Simulated model: Crater-shaped defects were prepared in plastic jaws typically used for insertion exercises. Brand-new implants were placed in the middle of these defects in a way that at least three threads were exposed **(a–c)**. The jaws were divided into smaller units **(d & e)** and autoclaved before conducting phase II examinations (bacterial cultivation —Perisolv application—Microbiological diagnostics etc.) in order to allow better fit into the furnace as well as in vials containing culture medium.

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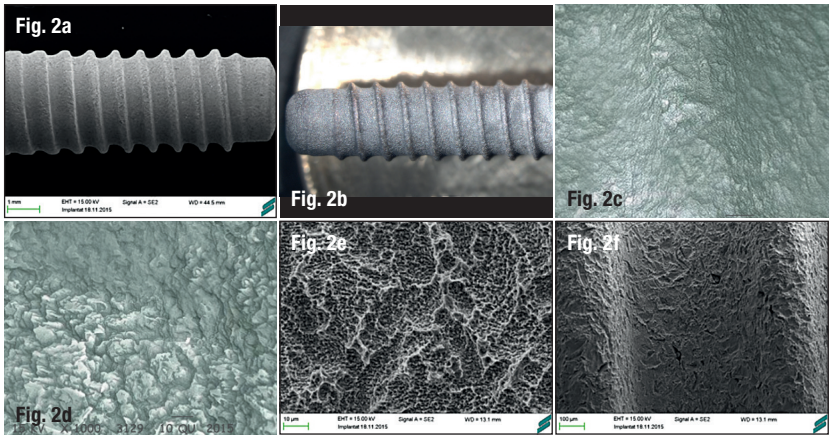

Figs. 2a–f: SEM analysis: Brand-new, sterile implants were inoculated and incubated with a microbial suspension. **Figure 2a** shows a scanning electron micrograph of this starting material. **Figure 2b** shows the bacterial turf on an implant thus processed. After Perisolv application, many areas showed a detached bacterial coating, the implant surface is virtually free from bacterial turf **(c & d)**. These "exposed spots" feature an unchanged implant structure **(e & f)**, therefore Perisolv application does not alter the implant surface per se.

Material and Methods

Two test phases were performed:

a) Phase I: Decontamination procedure of brand-new sterile implants, which have been inoculated with bacteria and subsequently coated with antimicrobial gel.

b) Phase II: Decontamination procedure of brand-new sterile implants placed in a plastic jaw with simulated bone defects after subsequent inoculation with bacteria and final exposure to antimicrobial gel.

Phase I: Decontamination procedure to implants inoculated with bacteria

To evaluate general suitability of the decontamination process, brand-new ITI implants (Institut Straumann AG, Basel, Switzerland) were microbiologically processed and analysed at the Institute for Medical Diagnostics Bioscientia (Freiburg, Germany).

Implant contamination—microbial procedure:

The implants were exposed and inoculated with a bacterial suspension (overnight cultures of *MRSA ATCC 33591*):

By means of sterile forceps, the implants were placed in 10 ml peptone yeast extract broth each. The tubes were incubated for 48 h at 36 °C and 5–10 % CO_2. After 48 h of incubation, the liquid was removed by means of vacuum filtration and the implant was transferred back to the initial container with sterile forceps for immediate further processing. Exclusively, implants with a medium bacterial growth were used for further examinations, implants with low or very low bacterial growth were excluded. Two test series were conducted with four implants each.

Decontamination procedure with contaminated whole implant bodies:

After completion of the microbiological work, three out of four implants were confronted with antimicrobial gel for two min in the sense of a decontamination procedure and immediately transferred to the Institute for microbiological analysis. One implant served as positive control, without conduction of the decontamination procedure.

- Antimicrobial Gel: An antimicrobial gel known for its application in periodontology was used (PERISOLV, REGEDENT AG, Zurich, Switzerland). It is typically used for adjuvant cleaning and decontamination of the outer tooth root area and the surrounding tissue.[10] Furthermore, in the literature the gel is described to feature a softening effect towards degenerative tissue before debridement of periodontal pockets.[9] According to the manufacturer, the gel does not affect healthy tissue[9] and, however, features an antimicrobial effect.[2,7]
- Gel composition: The gel contains amino acids (glutamic acid, leucine and lysine), carboxymethyl cellulose, titanium dioxide as well as ultra pure water and features a pH value below 10. The transparent liquid represents a 0.95 % sodium hypochlorite solution and is admixed immediately before the application. After mixing hypochlorite and amino acids, so-called Chloramines (NCA), a short-lived active substance class, are formed. These substances are part of the body's own immune system.[9]
- Gel Preparation: The set (gel and liquid) is stored in the refrigerator. One hour prior to planned application, the set is removed from the refrigerator to allow the contents of the kit to warm up to room temperature. Both components (gel and liquid) are arranged in separate syringes and are connected by means of screwing (Luer-lock connection). Both components were thoroughly mixed by moving the stamps back and forth 10–15 times. The activated and operational gel was finally left in the transparent syringe. A non-invasive/blunt application tip is attached and the implants are coated with the gel.

Table 1: Results of Phase I.

	Bacterial growth on implant	Implant 1	Implant 2	Implant 3	Implant 4 control
A:	MRSA	–	–	–	+ + +
B:	MRSA	–	+	–	+ + +

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