Clinical application of a Zeramex Plus implant

The following case report is intended to demonstrate the use of the Ze-ramex Plus Implant (Switzerland Dental Point AG Zurich). This implant combines two properties that are demanded and recommended by science, namely the use of industrially manufactured, high-quality zirconium dioxide according to standardized criteria, as well as a microstructured and rough implant surface. After several years of experience with one-piece zirconium dioxide implants, the author was curious about the results of a two-part system. The implant insertion process is not different in any way - apart from the recommended thread cutting for every bone quality - from the implantation process in titanium implantology. The two-part nature has significant advantages, as the implants can heal without any load. No special measures are required for interim prosthetics. In the prosthetic phase, we can use healing caps as well.

The case report describes the treatment of a 53-year-old patient with a Zeramex Plus Implant in the region of tooth 45, following an uncomplicated extraction in September 2012. Due to various intolerances, the patient desired treatment with a zirconium dioxide implant. On April 2, 2013, the patient was provided with a ten-millimeter implant with a diameter of 4.1 millimeters under local anesthesia. Preoperatively, the patient received a single dose of Penicillin, 1.5 grams.

Special thanks for the excellent collaboration go to my colleague Dipl. Stom. Dentist Katrin Zenker and the dental technician master Dirk Seiring, MSc Dental Technology.

Mario Kirste

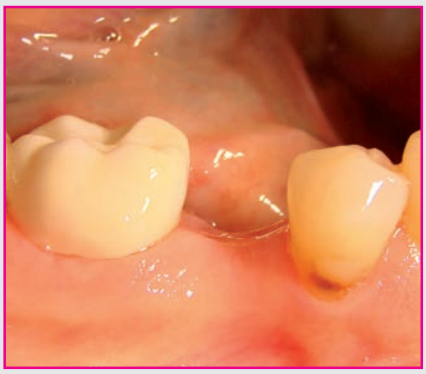
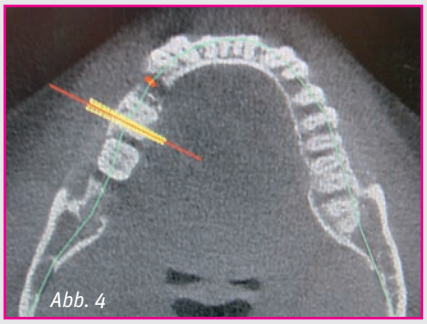


Figure 1: Initial condition in March 2013, state after the uncomplicated tooth extraction of tooth 45 in September 2012.

Figure 2: Occlusal view, completely epithelialized extraction site of tooth 45 (mirror image).

Figures 3-4: Preoperative production of a CBCT scan (January 2013) due to the proximity of the inferior alveolar nerve. The not yet fully completed osseous healing in region 45 could be assessed.



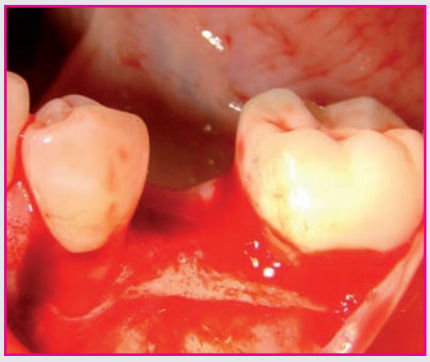


Figure 5: Situation after crestal incision and preparation of a mucoperiosteal flap.

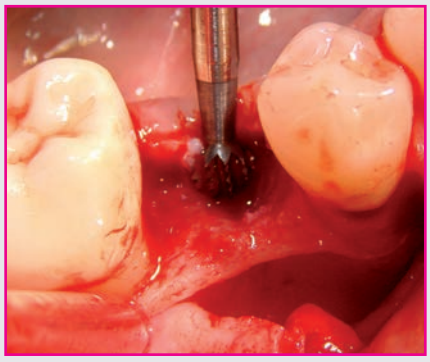


Figure 6: Implant bed preparation with a rose bur.

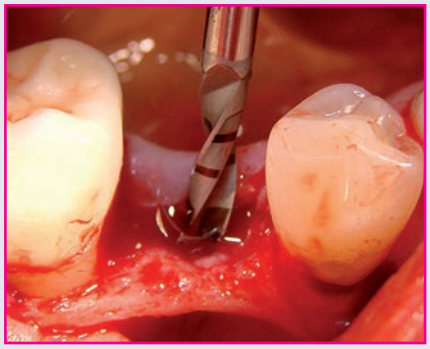


Figure 7: Preparation with the pilot drill.

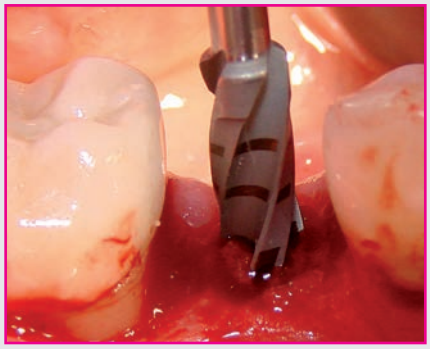


Figure 8: Final implant site preparation.

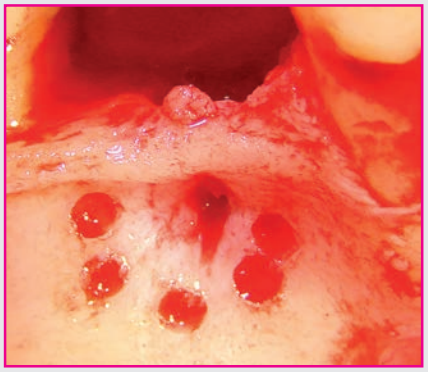


Figure 9: Diagnosis: Fenestration, hence preparation for a lateral augmentation.

Figure 10: After thread cutting, Zeramex Plus implant insertion. The macrodesign significantly differs from all known zirconium dioxide implants, whether one-piece or two-piece. The manufacturer relies on friction through the microdesign. It is noteworthy that the manufacturer has decided to pursue a tissue-level implant concept.

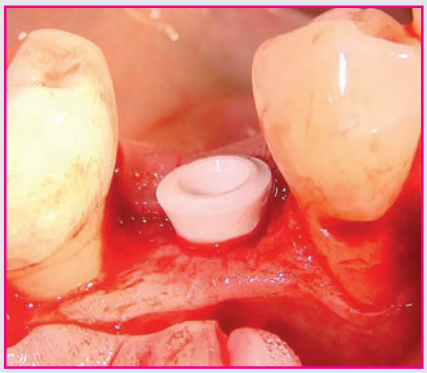


Figure 11: Placement of the Zeramex Plus implant at the tissue-level position.

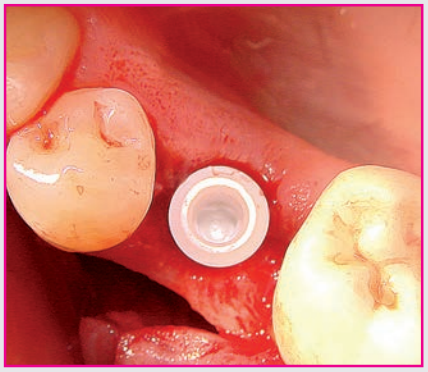


Figure 12: A view from the top showing the implant position confirmation in region 45

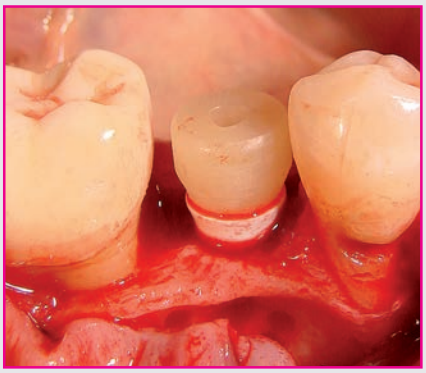


Fig. 13: Placement of a healing cap to avoid further intervention.

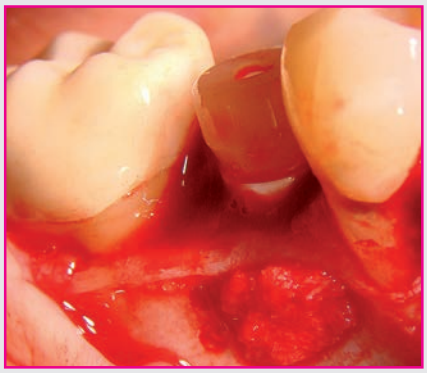


Figure 14: Replantation of the autologous particulated bone.

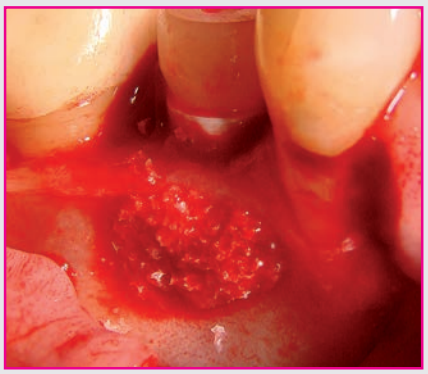


Figure 15: Placement of a biphasic bone graft material (BoneCeramic, Straumann company).

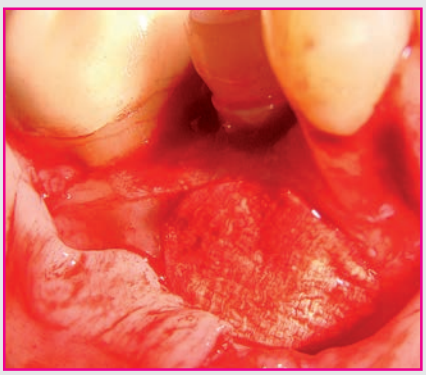


Figure 15: Placement of a biphasic bone graft material (BoneCeramic, Straumann company).

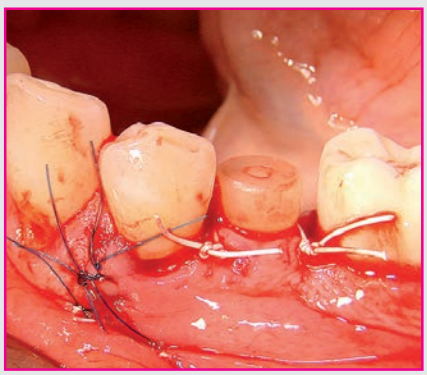


Fig. 17: Primary tension-free wound closure with Gore-Tex, P5K17 CV5 RT 16 (mirror image).

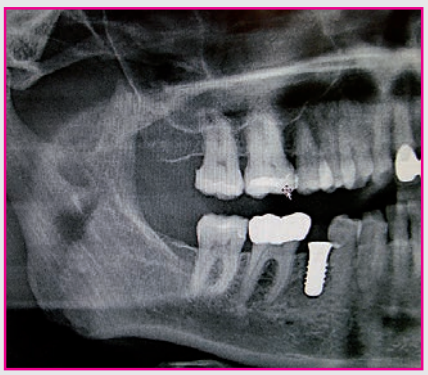


Fig. 18: Postoperative X-ray examination.

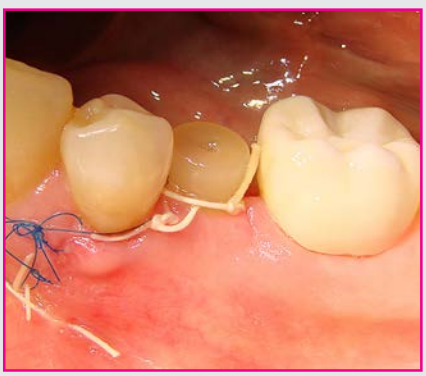


Fig. 19-20: One-week postoperative condition (mirror images).

Fig. 21-22: Healing progress eight weeks postoperatively (mirror images).

Fig. 23-24: Condition 12 weeks postoperatively (mirror image).

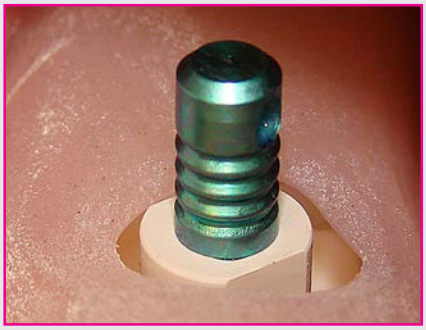


Fig. 28-29: Optimization of the custom spoon, impression with Impregum, and technique implant positioning. The impression post includes three reproducible positions, and the latest impression posts can be fixed with a screw.

Fig. 25-27: Implant situation immediately before impression.

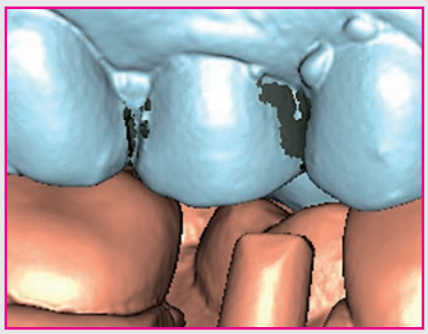


Fig. 30, 31, 32: Model fabrication, scanning of the ceramic abutment, zirconia cap.

Fig. 33-34: Ceramic veneering of the crown after sintering process.

Comment on Materials

For the crown manufacturing, Zircon-Ceramill Zi was used, and the material shrinks by approximately 22% after the sintering process. The coloring of the zirconia crown body was done using DD Bio Z color TS immediately before the sintering process. The material for veneering is zirconia (Heraceram), and both the masses and glaze pastes are from the Heraeus company.

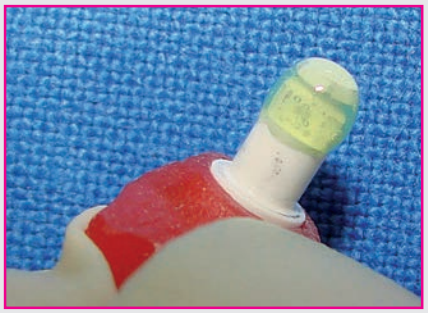


Fig. 43-44: Zirconia crown in region 45.

Dr. Mario Kirste

- *1984-1989: Studied Dentistry (ZHK) at the Dental Clinic of Humboldt University in Berlin, culminating in a State Examination.*
- *1989-1991: Completed the assistantship at the Frankfurt (Oder) Clinic for Oral and Maxillofacial Surgery.*
- *Established a joint practice in Frankfurt (Oder).*
- *1992-1993: Underwent specialized training in Periodontology under the guidance of Prof. Dr. W. Krüger.*
- *1996: Completed a doctoral degree (Ph.D.).*
- *2004: Completed the Implantology curriculum of the German Society of Implantology (DGI).*
- *2005: Became a member of the International Team for Implantology (ITI).*
- *2007: Completed the Master's program in Implantology in Krems, Austria.*
- *2008: Became an active member of the Bonemanagement College, responsible for student education in Chieming, 2008-2009 in Düsseldorf, 2011 in Berlin, and 2012 in Bad Saarow.*
- *Conducted scientific research in the field of Piezotechnology (bone surgery) and intraosseous anesthesia.*
- *In 2012, published the user manual (Clinical Guide) for Anesto (W&H Company).*
- *From 2009 to 2012, organized training events and expert meetings for Degradable Solution (CH) and conducted clinical research on the bone augmentation material "easy-graft CRYSTAL."*
- *Participated in national and international continuing education events.*
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