

In this clinical evaluation report, Dr Bonatz underlines the fact that it is important today that patients can expect to have a minimum of surgical interventions, maximum tissue stability, long term ease of cleaning their teeth and thus high levels of patient satisfaction. Patients today have high expectations, and they find it completely natural that they should expect to receive the most advanced forms of conservative, endodontological and surgical parodontological dentistry, as well as regular prophylactic treatment. Dental practices, like ours, which can provide this spectrum of services while at the same time can also provide lots of other “partial services” in-house, are at a great advantage. The advances in modern dental implantology also assist us in providing high standards of care to our patients: The use of significantly simplified dental surgical procedures, together with really thin surgical kits and individually tailored prosthetic components, means that the dentist can concentrate on the essentials while providing treatment to his patients.

Dr. Volker Bonatz
(Information about the author)



Finding the right dental implant prosthetics for long-term success

Dr. Volker Bonatz M.Sc. M.Sc.

A conscientious approach to dentistry for the elderly and continuous improvements in prophylactic periodontal care has meant that increasing numbers of elderly

patients now come to dental practices with the desire for fixed dentures. Although modern dental implantology offers suitable solutions for almost every type of gap topology, from single-tooth

restoration to completely edentulous jaws, it is desirable, in cases where the patient has only a few missing teeth, that the dentist can implant

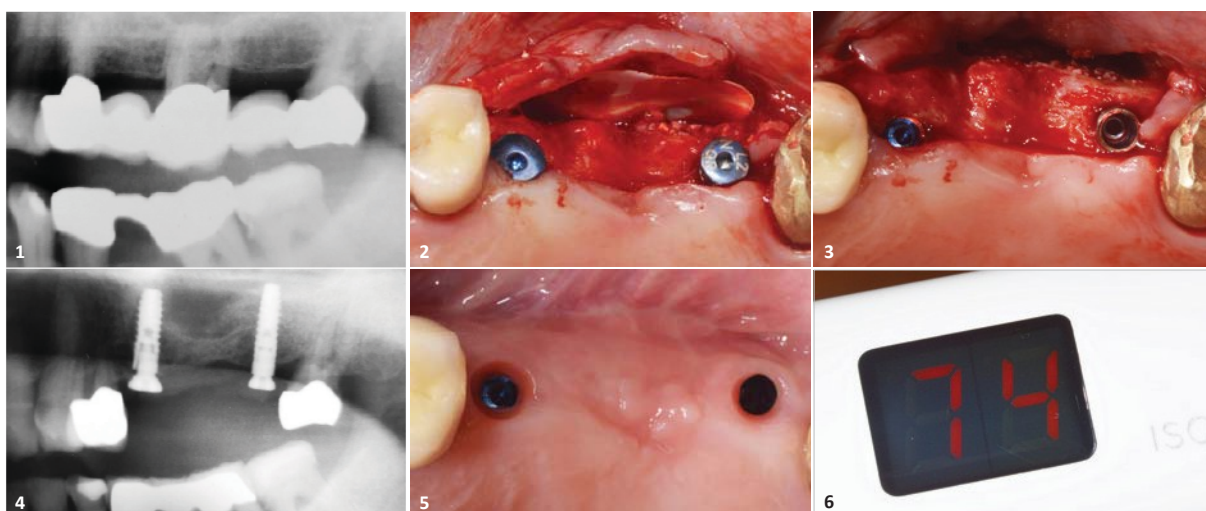


Fig. 1: Tooth 26 has been severely damaged below the crown. – **Fig. 2:** Autologous bone, PORESORB-TCP (LASAK), and a collagen membrane... – **Fig. 3:** ... prior to suturing – **Fig. 4:** Postoperative radiograph. The gingiva former on tooth 25 must be retightened. – **Fig. 5:** The situation after open healing. – **Fig. 6:** The ISQ value recorded after exposure.

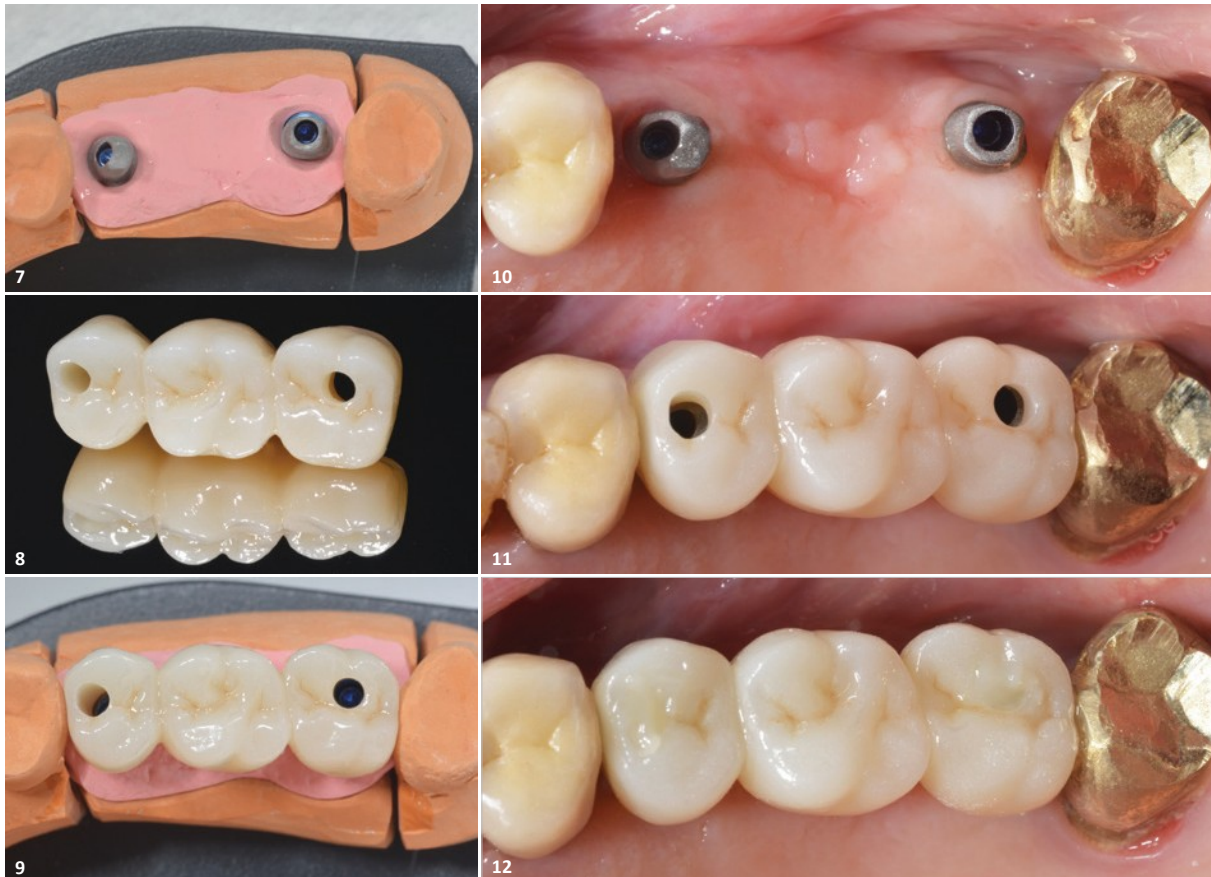


Fig. 7: Model situation with the pre-fabricated abutment – **Fig. 8:** Dental technician (Mr F. Deinl, Waging am See, Germany) decided to use an occlusally open design. – **Fig. 9:** The zirconia bridge on the model (dds zirconia® one4all ut-multi-layered, digital dental solutions). – **Fig. 10:** The abutments are screwed into place intraorally – **Fig. 11:** ... and the bridge is cemented into position. – **Fig. 12:** Occlusal caps with composite (IPS Empress Direct, Ivoclar Vivadent).

with pinpoint accuracy and can, therefore, satisfy the patient's often expressed wish for "fixed teeth." The overwhelming majority of our patients are routinely recalled so that we can expect high levels of compliance with regard to periodontal care. At the same time, however, taking into account the increasing age of our patients and the fact that they are likely to have reduced manual dexterity in the future, we cannot overestimate their ability to look after their teeth properly. In the case study, in this evaluation report, Dr Bonatz describes the treatment of a 70-year-old female patient with a clearly subcoronally destroyed tooth 26 (Fig. 1), which had been included in a 30-year-old bridge procedure. It was possible to insert the probe without resistance from the palatal area through the damaged trifurcation area in the buccal direction. The questions which had to be answered at the beginning of the treatment were: How could the patient be given some new fixed teeth in just a few treatment sessions, and within a reasonable budget, whilst at the same time avoid-

ing the use of removable dental prosthetics? Is there a way in which we can avoid having to follow the old premise of "one implant per missing tooth" without exceeding the planned dental technical and prosthetic parameters? Whenever the overall clinical findings and overall periodontal conditions allow it and if the initial prosthetic situation does not involve a recessed or displaced bite position, in practice, we avoid the making of larger prosthetic restorations and limit ourselves to the reconstruction of the affected areas. In recent decades there has been a shift in the paradigm towards the use of fewer and smaller diameter implants. Dental implants which are above 4.5 mm in diameter are reserved for special indications. And now, whenever we are able to use implants with highly polished crestal parts in the posterior region, there are no obstacles to success in the long-term clinical perspective. The patient's bridge in the left upper jaw, which had been made more than three decades previously at another dental practice, had clearly suffered considerable

atrophy in the areas under the pontics. At the same time, it was important in terms of the surgical plan and for the later prosthetic conception to be able to avoid using (block-) augmentation methods and, if possible, to work only using a sinus lift. It was then possible during the first treatment session to separate the mesial and distal bridge anchors and to leave them in place in view of their clinical stability and only moderate periodontal exposure. During the same treatment session, the destroyed tooth 26, together with its roots were removed without osteotomy.

The insertion of the implants
After a six-week healing period without complications, two 12 mm long implants, with a diameter of 3.5 mm and a 1.7mm high machined neck were placed in the regions 25 and 27 (BioniQ® Plus, LASAK) and at the same time the posterior region was augmented intrasinusally with a mixture of autologous bone and TCP (Fig. 2–4). The selection of this type



Fig. 13: Abutment fitting for a BioniQ® Implant (SEM image, 100x).

of implant took into consideration the aesthetic specifics of the upper posterior region. Autologous bone was removed from the buccal sinus wall in the surgical procedure using a Safescraper and, as a “first layer”, was applied to tooth 27 during the implantation. Further in the buccal direction and in the direction of the supported collagen membrane (Collagene AT®, distributed by LASAK), tricalcium phosphate with a grain size of 0.6–1.0mm was placed (PORESORB-TCP, LASAK). The selection of implant type and diameter permitted the later performance of a bridge prosthetic restoration. The machined neck in the region of the posterior teeth ensured long-term stable periodontal situation.

Prosthetic care

The prosthetic phase of treatment began five months after open healing (Fig. 5). The implant stability, which was ascertained prior to further treatment (Ostell Osseo 100, NSK), was 74 ISQ for both implants (Fig. 6). Facebow registration and open tray impression were conducted in the standard way for prosthetic procedures. A bite registration showed that the crown left on tooth 28 permitted a secure association with the models of the upper and lower jaws. Once the dental technician had finished analysing the model situation, (Fig. 7), he decided that

everything should be made in a single sitting. This had the additional benefit of saving time for both the practice and for the patient.

Readers who are so inclined and who are among those who had the earlier types of implants will know all-too-well about the firmly cemented prosthetic superstructures which had occlusally completely closed chewing surfaces and about the considerable nuisance which was caused when the replacement teeth, which had previously been so firmly in place became loose after prolonged periods of chewing food. The dentist had to work with the tip of a high carbon steel milling machine which became very hot, together with the red angle piece which was also becoming hot, in a way which was not always very accurately targeted (because of the dentist’s limited ability to find “where the screw actually was”) and with the necessary help of the patient to get through severe burn-on alloy layers. Sometimes when conducting such procedure, it even became necessary to start again in making a new replacement tooth. It is with vivid memories such as these in mind that when inserting implants and aligning implants, we take care, as far as possible, for both ourselves as dentists and for the dental technicians, to allow easy follow-up treatment and to create implant-supported restorations which are occlusally open and which can easily be screwed into place (Fig. 8 and 9). In the present case, however, it was possible to fully satisfy the expectations of the implant prosthetics. The dental technician decided to use two aesthetic abutments with a more periodontally comfortable cervical form. The supplied and microroughened abutments were screwed in place intraorally (Fig. 10) and the ZrO₂ superstructure was then lightly coated with cement (G-Cem, GC) in the guide channels with a brush and fixed (Fig. 11). This procedure avoided the previously existing risk of leaving unnoticed deposits of cement in the subgingival areas and in areas near the implant neck. For long-term success, the abutments must be positioned without any

clearance in the precision inner hex of the implant (Fig. 13, SEM image, LASAK). The occlusal screw access holes were filled with composite over foam pellets (Fig. 12). The interproximal passability was tested using the appropriate prophylactic material (“SuperFloss”, Micro-brushes), as was the occlusion and articulation. The patient was then discharged for regular recall.

Summary

Increasing numbers of elderly dental patients now expect to maintain or to return to their previous levels of chewing comfort following minimally invasive dental treatments. In addition, they often have only a limited budget for their treatment. To be able to satisfy all these requirements, it is important that a dentist who is working in the field of implantology has access to a wide range of different types of implants, that they have the support of an experienced partner technician and can use the most modern CAD/CAM techniques to be able to both plan and provide the best long-term and periodontally friendly results for their patients. Many patients also prefer to have all their clinical treatments provided in their normal familiar dental practice. It is also best if the number of implant and prosthetic treatment sessions can be kept to a minimum. In the present case, this objective was achieved using the most suitable surgical procedure, the selection of thin and cervically high-polished implants as well as periodontally friendly designed fixed restoration.

Contact:



Dr. Volker Bonatz M.Sc. M.Sc.

Trifelsstrasse 14

76829 Landau, Germany

www.meinzahnarztinlandau.de