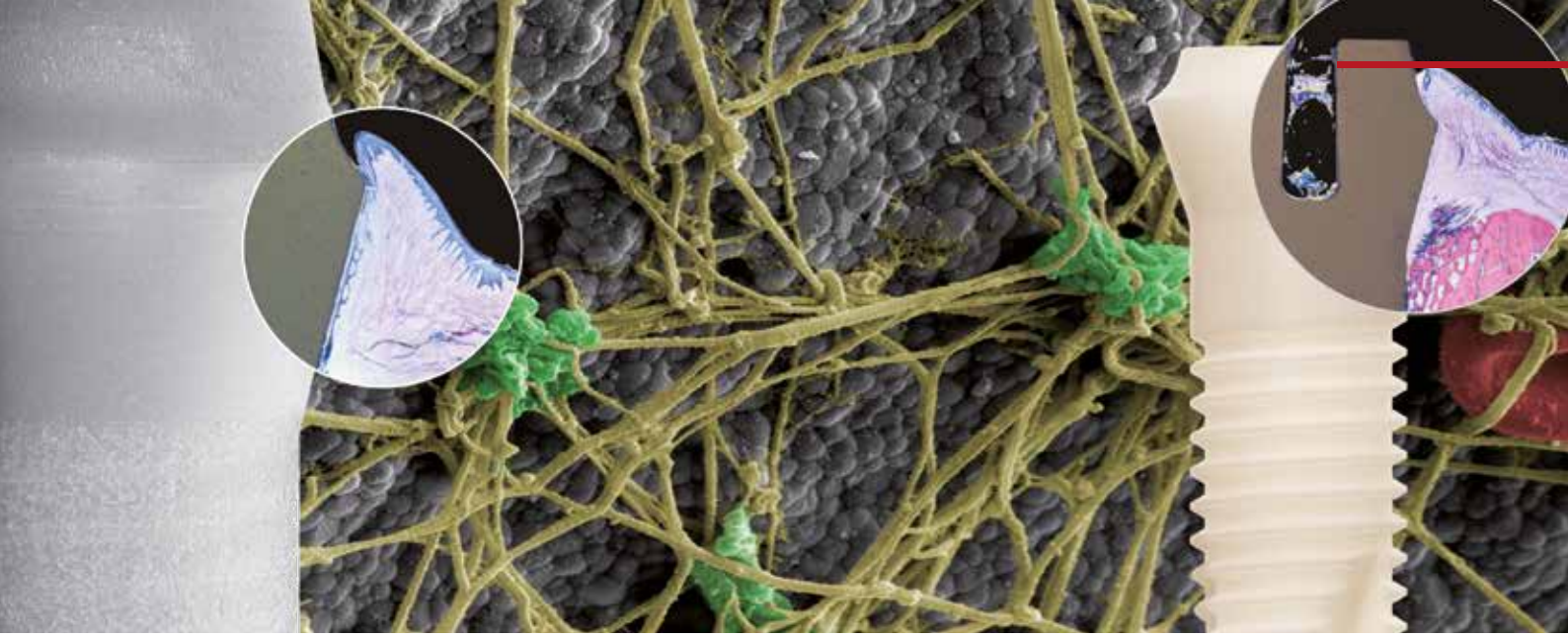


Fig. 1: A few minutes after insertion, blood coagulation results in the fibrin network formation on the surface of the PATENT™ implant

PATENT™ CERAMIC IMPLANT: THE STANDARD OF CARE FOR DENTAL IMPLANTOLOGY

In the last few years, ceramic implants have been booming, a viable alternative for about 15% of the population who have reactions to titanium oxide and who therefore cannot be provided with titanium implants. In order to observe current ceramic dental implants, I have tested almost all ceramic implant systems available on the market for the last decade.

When I placed the PATENT™ implant (previously called BioWin!) for the first time about 4 years ago, I found the implant of my dreams: a metal-free, bio-integrable implant that you surgically place using the nontraumatic minimally invasive procedure (without raising a mucoperiosteal flap) and of which the prosthetic restoration is performed like a natural tooth (also using the minimally invasive procedure without reopening the gingiva). From the beginning, it has been reassuring that these implants I have been placing are safe and esthetic, streamlining practice workflows. In addition, it impressed practitioners that front teeth can be rehabilitated with immediate-load PATENT™ implants. Meanwhile, even many convinced titanium system users have switched to the PATENT™ implant in their dental office.

PATENT™ implant surgery

The PATENT™ insertion protocol is efficient: for dense D1/D2 bone, the PATENT™ implant is placed using the protocol by means of the instruments in the PATENT™ Surgical Kit and the micromotor (20 rpm and 30 Ncm).
Used in low density D3/D4 bone, Champions Condensers allow for condensing bone, for example in cases of immediate implantation or a simultaneous IDS (Internal Direct Sinus Lift). This "osseous metamorphosis" (OMM) increases the D3/D4 bone densification within a few minutes, i.e. it increases the grip of the implant by condensing the drilling walls, or during a sinus lift, it lifts the membrane to 6 mm.
PATENT™ implants are available in lengths of 7; 9; 11; and 13 mm and in diameters of 4.1 mm; 4.5 mm; and 5.0 mm. If need be, PATENT™ two-piece implants can also be available with diameters of 3.5 mm or more than 5.0 since PATENT™ implants can also be ordered in individual dimensions.
A few minutes after insertion, blood coagulation results in a fibrin network formation on the PATENT™ implant surface. The implant surface is created using a patented fabrication process during which the surface is treated before sintering **(Fig. 1)**.
The two videos **(QR-Codes 1 and 2)** show the procedure of a PATENT™ implantation using the instruments of the PATENT™ Surgical Kit and the ø 4.5 mm-PATENT™ implant placement with a simultaneous IDS (sinus lift) and using the Smart Grinder protocol to convert extracted teeth into an autologous bone replacement graft.

Case report Delayed implantation

The patient received delayed implants in sites 44 and 46. Integrated in the PATENT™ implant, the Abutment has a ø 5.2 mm-Emergence Profile (EP) for the ø 4.1 PATENT™ and a Ø 6.3 mm-EP of for the ø 4.5 mm - and ø 5.0 mm – PATENT™ implants respectively. After bio-integration of 3 to 4 months (hard tissue and soft tissue), the Post, which consists of special medical Glass Fiber, is glued

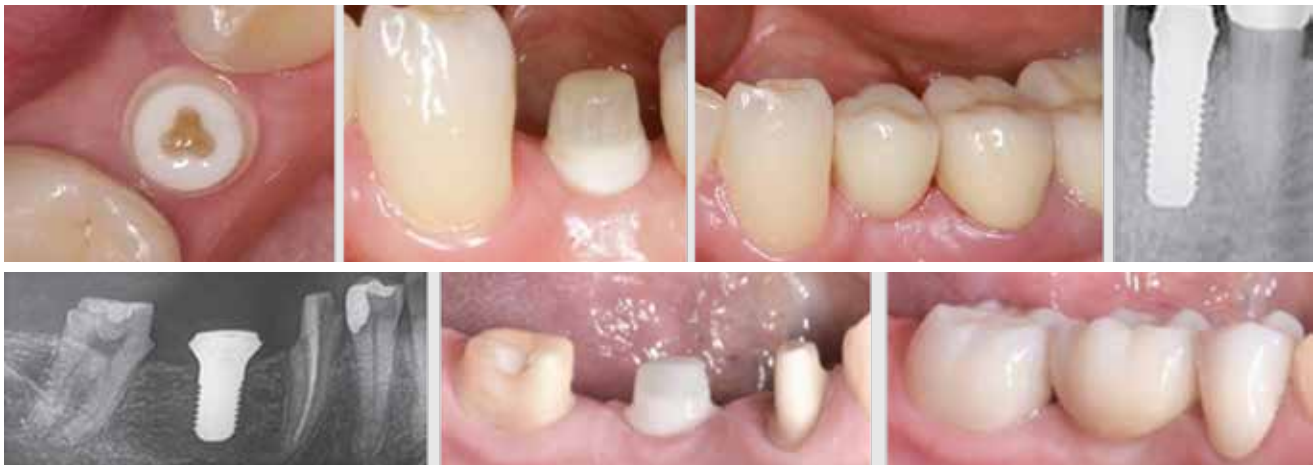


Fig. 2–8: Case report Delayed implantation in sites 44 and 46

with Relyx Unicem (3M Espe) without bonding/silane systems; the Post is prepared slightly, of which an impression is made for finally fitting the denture like a dental crown **(Fig. 2–8)**.
QR-Code 3 shows the 2nd possibility of gluing the Post: an impression of the C-Connection is taken. Then, the dental laboratory prepares the Post and fabricates the all-ceramic crown.

In another case, the teeth 11 + 21 (fracture 11 and serious bone loss 21) were non-traumatically extracted. Then, the cavity was prepared, and the PATENT™ implants were placed at 30 Ncm. Immediately after the X-rays had been taken, the Glass Fiber Posts were bonded with Relyx Unicem and prepared. Their own teeth veneers were used as temporary restoration with the mesial surfaces of the adjacent teeth **(Fig. 9–13)**.

Surface macro-roughness

In fact, the macro-roughness of the surface is an essential prerequisite for successful integration and, concerning zircon implant systems, for ensuring purely mechanical "bio-integration". "Bio-integration" comprises the hard tissue behavior (osseointegration) and the soft tissue behavior of the gingiva towards the zircon material **(Fig. 14)**.
The macro-image **(Fig. 15)** shows the rough PATENT™ surface. On the right you see the flat surface of a known competitor's zircon system, which is more tapping than PATENT™.
In most cases, non-osseointegration of zircon systems is due to the flat zircon implant surface. Unlike surfaces of current titanium systems and the PATENT™ system, flat surfaces prevent the bone from healing on the smallest zircon lacunae.
Titanium is a low density metal, of which the roughness can be created using blasting and several etching processes with acid. However, these procedures have hardly any effect on zircon material. After such surface treatments, ceramic surfaces remain flat, which prevents osteoblasts or their progenitor cells from embedding in the micro-pores and from (rapidly) forming a strong biological connection to the bone. High failure rates are not caused by treatment errors or wrong medical history, practitioners have just "bet on the wrong horse".

Gap in screw-retained zircon implant systems

Due to the patented fabrication procedure, the yttrium oxide-stabilized zirconia is rigid and has outstanding surface characteristics. The Tissue Leve-Design avoids a micro-gap.
A conical titanium implant that is connected to its titanium abutment by "cold welding" does not present a micro-gap that is vulnerable to bacteria. The smallest bacterium size is about 1.2 µm. The micro-gap of a current titanium implant (e.g. Champions (R)Evolution®) measures between 0-0.6 µm. The gap of a screw-retained ceramic or PEKK abutment of a zircon implant mea-

Fig. 9–13 Case report Fracture 11 and serious bone loss 21

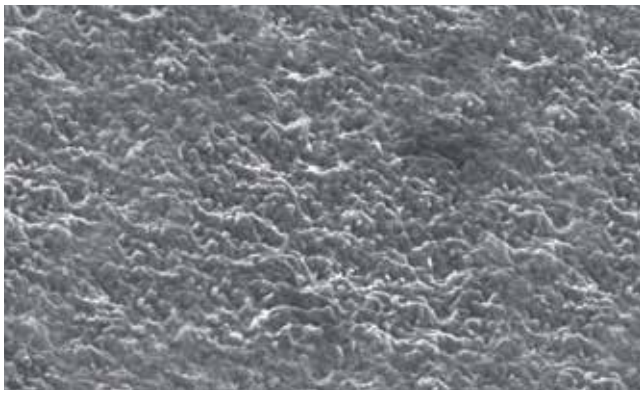


Fig. 14: View of the rough surface of a PATENT™ zircon implant

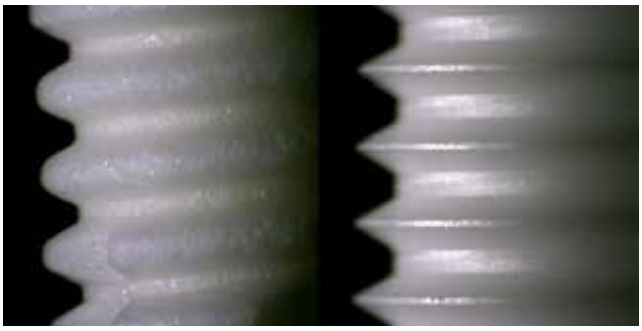


Fig. 15: Macro-image: on the left, view of a rough surface of the PATENT™ and on the right of a flat surface of a competitor's system

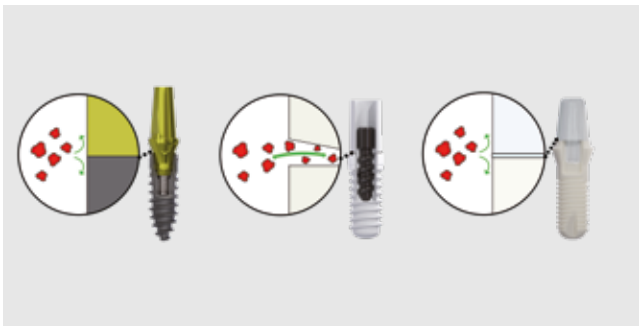


Fig. 16: Comparison between the Champions (R)Evolution implant and the PATENT™ implant

sures about 60–80 µm, so at least 100 times more, which means that screw-retained zircon systems are not considered as bacteria-resistant.

What I find astonishing at various specialist congresses is that such an important criterion as resistance to bacteria, which has rightly been a stumbling block to titanium implants for decades (incl. Zipprich study at the University of Frankfurt/Main), has been completely ignored regarding screw-retained zircon implants! What is the solution? Actually, you already know it!
In the field of Esthetic Dentistry, do you screw your veneers or ceramic inlays onto your tooth base? No, of course you glue them. The advantage of PATENT™ of Zircon-Medical: gluing is performed with RelyX Unicem in a supragingival position without bonding systems, which can be easily checked. These 'fake news' of the risk of cementitis have therefore been refuted. In practice, the bonding as described almost never loosens **(Fig. 17 and 18)**.

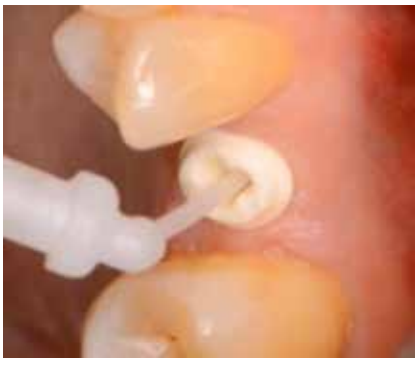
There are videos about PATENT™: QR-Code 4 shows the surgical insertion of a PATENT™ implant, the impression, and rehabilitation with the crown. QR-Code 5 shows a Glass Fiber Post, the prosthetic restoration, and the preparation.

From a forensic point of view, as responsible dentists you are obliged to inform your patients about alternatives to titanium implant treatments, including zirconia implant placements as a viable alternative to titanium implant placements. In fact, efficacy of PATENT™ zircon implants has been backed by peer-reviewed scientific studies in the long term **(Fig. 19)**.

Summary

Currently, the PATENT™ implant has been the only ceramic implant system with long-term results of efficacy based on firm scientific evidence (for about more than 9 years), ensuring safe and successful placement.

As VIP-ZM e. V. dentists, who have been fully convinced of this PATENT™ two-piece implant system (distributed by Zircon-Medical and Champions-Implants) in the last 3 years, our main aim is to offer patients good health care. Actually, the surgical placement a PATENT™ two-piece implant system is similar to that of a titanium two-piece implant, added to simplified prosthetic restorations, at little cost. Zircon implants are no longer a myth.



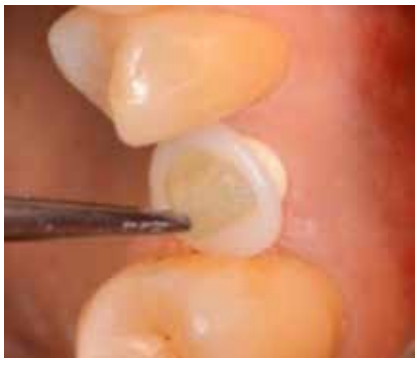


Fig. 17 and 18: 3 months after surgery, the rehabilitation with ceramic restorations is finished.

Fig. 19: PATENT™ implant

Furthermore, food supplement and substitute level measurements in patients are unnecessary because of lack of scientific evidence. According to scientific studies in the long term, PATENT™ implants placed in patients with periodontitis and without prior vitamin D measurements have hit a 95–98% success rate. In the meantime, some big private health insurance companies have access to the scientific data and as a rule cover certain dental treatments related to PATENT™ dental implants.

Fibrin network formation on the implant surface is a prerequisite for contact osteogenesis, promoting a rapid healing time and resulting in an implant with a very rough surface that is pure, hydrophilic, and osteoconductive and that allows for a rapid adaptation of bone cells in the early phase of osseointegration. Biointegration is essential for success and durability of the implant. Successful healing between the soft tissue and the PATENT™ implant helps to avoid infections and to minimize complications such as peri-implantitis and peri-mucositis. The cemented connection between the implant and the integrated abutment is positioned above the tissue and completely covered by the dental crown.

Efficiency coupled with simplification results in success – from the point of view of both dental surgeons and dental technicians. State-of-the-art zircon implants are setting a new standard for modern Dental Implantology, making this implant treatment a viable option.

Allow your patients to decide which implant material they wish to have for implantation. Of course, the patient is eligible to receive information about classical titanium implant treatment alternatives such as zircon implant placements. Actually, PATENT™ implants in combination with the MIMI® implantation have become the standard of care for implant treatment, the perfect solution for patients.

Conclusion

Ceramic implants, a viable option, can be placed as efficiently as titanium implants to which you are used to, with success rates on par with titanium systems. PATENT™ ceramic implants allow for effective placement, with hardly any constraint.

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Scan the QR-Codes with the camera of your Smartphone to watch the films:

PATENT™ implantation procedure using the PATENT™ Surgical Kit

PATENT™ ceramic implant ø 4.5 with simultaneous IDS

Bonding of the Post

PATENT™ implant insertion, impression, and rehabilitation with a crown

Glass Fiber Post: prosthetic restoration and preparation