

# Patent™—the proven master of zirconia implants

## Supported by first ever long-term studies

Zircon Medical Management, Switzerland



**Fig. 1:** At the 2022 Academy of Osseointegration annual meeting in February, the first ever nine-year prospective study on two-piece ceramic implants was presented.

**In response to the desire** for a broader range of indications and greater prosthetic flexibility, two-piece ceramic implant systems are increasingly finding their way on to the market. In the past, however, numerous two-piece ceramic implant systems have come to the market that presented major drawbacks regarding failing osseointegration or high fracture rates. With the Patent™ Dental Implant System, Zircon Medical Management has adopted a revolutionary, 20-year-old technology that promises to eliminate these drawbacks of conventional ceramic implant systems. Making good on this ambitious claim, a team of researchers at Heinrich Heine University Düsseldorf in Germany has now presented the first reliable long-term data of its kind on the clinical success of two-piece ceramic implants at the recent 2022 Academy of Osseointegration (AO) annual meeting in San Diego in the US, heralding a paradigm shift in the scientific debate surrounding dental implants. The fact that long-term successful treatments can be realised with the two-piece Patent™ Dental Implant System has now been scientifically proved.

### The first ever nine-year study on ceramic implants

The prospective nine-year study presented at the recent AO annual meeting investigated patients with average health profiles who had received two-piece Patent™ Implants in single-tooth posterior restorations at Heinrich Heine University Düsseldorf between 2011 and 2012.<sup>1</sup> Extremely high survival rates for the implants (95.8%) were documented after nine years of wear—rates comparable to those of titanium implants. Also, stable bone and soft-tissue levels with mucosal recession of less than 1 mm were documented in all the implants after the nine-year period. Furthermore, the researchers observed no bleeding on probing in more than half of the implants after this period. In light of the convincing results, lead researcher Prof. Jürgen Becker emphasised that predictable, safe and long-term reliable restorations can be achieved in average implant patients with the two-piece Patent™ Implants.

### Revolutionary prosthetic concept

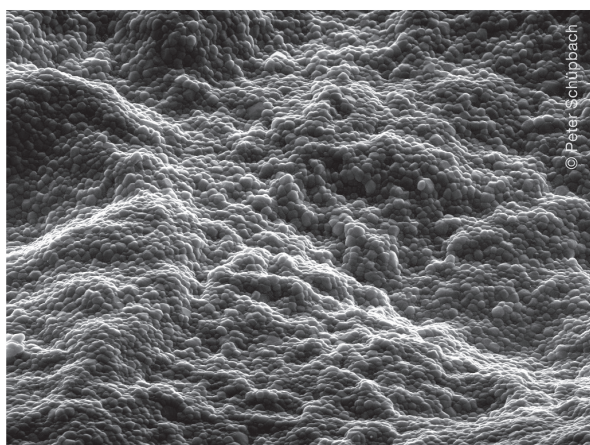
The excellent long-term performance of the two-piece Patent™ Dental Implant System documented in the prospective study can be attributed to a number of special design factors implemented with the aim of eliminating the drawbacks of conventional ceramic implants once and for all. Unlike some other ceramic implants, the Patent™ implant design was not merely copied from titanium implants, but was purposefully engineered with the specific material properties of zirconia in mind. While other systems rely on metal screws for the internal connection or employ an unfavourable ceramic–ceramic screw connection, the Patent™ Dental Implant System has developed a revolutionary prosthetic concept: the prosthetic connection is realised via a high-tech glass fibre post, which has dentine-like properties and, being flexible, dampens the masticatory forces transferred from the definitive restoration to the implant. The result is a metal-free and extremely stable construction without a bacteria-prone micro-gap at the subgingival level.

## Fast and predictable osseointegration

The proven high survival rates of Patent™ Implants can also be attributed to the special implant surface created in a proprietary manufacturing process. The endosteal implant surface is hydrophilic, osteoconductive and significantly rougher than the surfaces of conventional ceramic implants, having a roughness value of 6µm. Within minutes after insertion, a fibrin network forms on it, promoting extremely successful bone healing through contact osteogenesis and optimising the early phase of healing. The superior bone healing of Patent™ Implants was impressively demonstrated in an animal model study by Drs Roland Glauser and Peter Schüpbach (in publication), in which the researchers found that Patent™ Implants achieve bone-implant contact of over 70% after only four weeks of healing. Such results demonstrate that the Patent™ Dental Implant System outperforms all other implants examined in comparable studies to date. Moreover, thanks to the biomimetic implant design, which was modelled after a natural tooth, the Patent™ Dental Implant System permits a particularly high degree of soft-tissue adaptation. This soft-tissue seal prevents pathogenic bacteria from infiltrating the underlying tissue and causing marginal bone loss, peri-implant inflammation and systemic complications.

## Patent™ users and experts share their experiences

Dr Sammy Noubissi, president of the US expert society International Academy of Ceramic Implantology, stressed: “I’ve had the opportunity to look at the Patent™ Dental Implant System very closely many times, and I have colleagues and friends who are using them extensively now. The Patent™ Dental Implant System is the first ceramic implant with a decade of research behind it. This is unique, especially in the ceramic implant world. In the past, many ceramic implant systems with comparatively little scientific evidence have come to the market. The Patent™ Dental Implant System has been used,



**Fig. 3:** With a roughness value of 6µm, the surface of the Patent™ Dental Implant System is significantly rougher than the surfaces of conventional ceramic implants, ensuring fast and predictable osseointegration (scanning electron microscopy 10,000× magnification).



**Fig. 2:** The two-piece Patent™ Dental Implant System is metal-free. The prosthetic connection is realised via a high-tech glass fibre post, which is inserted into the patented 3C connection of the implant and cemented. It is then ground and restored just like a natural tooth. The glass fibre post has dentine-like properties and offers great flexibility, immense strength and a wide variety of prosthetic possibilities.

tested and evaluated since 2006. In ceramic implantology, I have never seen a product that has been so extensively researched before being commercially marketed.”

Commenting on the unique nine-year study at Heinrich Heine University Düsseldorf, Dr Paul Lee, founder of the Luxembourg-based INTEGRA biohealth clinic, said: “This long-term study confirms what I have been observing for ten years now in clinical practice with the Patent™ Implants I have placed.” Dr Glauser, who is a Swiss implantologist, confirmed: “Thanks to the special, highly rough surface, even better results in terms of bone healing can be achieved with Patent™ Implants than with all other ceramic implants on the market.” Among the many Patent™ users is also Dr Marcel Wainwright, who said of the healing success of the Patent™ Dental Implant System: “The rougher the surface, the easier it is for the cells to attach to it and form a fibrin network. I don’t know of any other implant system that has a higher roughness.” In addition, Dr Wainwright values the easy handling of the Patent™ Implant: “The switch to Patent™ is by no means dramatic—the few things that need to be learned can be explained in one afternoon.”

## Reference

1. Rauch NJ, Brunello G, Becker K, Schwarz F, John G, Becker J. Two-piece zirconia implants in posterior regions: a prospective cohort study with a follow-up period of nine years. Paper presented at: Academy of Osseointegration annual meeting; 2022 Feb 24–26; San Diego, Calif., US.

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