

Ceramic implantology— At eye level with titanium

The European Society for Ceramic Implantology (ESCI) will hold their First European Congress for Ceramic Implant Dentistry on 11 and 12 October 2019 in Zurich, Switzerland. The congress will provide both interested beginners and experienced users with valuable new insights into the successful application of ceramic implants as an additional and reliable therapy alternative to the established titanium implants. At IDS 2019, *ceramic implants* had the chance to talk to Dr Jens Tartsch about his new role as ESCI President, the current state of ceramic implantology and what congress participants can look forward to this autumn.

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Dr Tartsch, in addition to your practical work as an implantologist, you are the President of the European Society for Ceramic Implantology (ESCI), which was founded in 2018. What was your first year as President like?

It was an exciting and, in my opinion, a very successful first year. We have received a lot of positive feedback from the press and from manufacturers, and above all from the dentists. Since its founding, the ESCI has been able to gain members from ten European countries. A special event was the First European Council for Ceramic Implantology, held in Zurich in October 2018, where the ESCI Board, the ESCI Scientific Advisory Board with its high-grade members, and the most important manufacturers as ESCI Company Partners met to discuss scientific questions concerning ceramic implantology. At the end of the event, the first official statement on the subject of “dental implantology with zirconia implants”, supported by all participants, was adopted.

What distinguishes the ESCI from other dental associations and who is involved in it?

The ESCI is a Europe-wide network and an active community for ceramic implantology. It is a neutral and independent dental association that combines scientific research and clinical experience. All interest groups who aim to foster ceramic implantology are involved in it: dentists, dental technicians, institutions and research facilities, clinics, universities and manufacturers.

In your opinion, what are the major scientific issues related to ceramic implantology?

I would like to answer this with the official ESCI statement: current clinical studies on zirconium dioxide implants, available for a period of five years, show comparable results with titanium implants. This is why zirconia implants can be recommended for clinical use. However, further long-term data is needed to confirm the very promising short and medium-term data. In addition, improved manufacturing processes and standardised testing procedures are also needed.

Ceramic is well-established in dentistry. However, as an implant material it has only been used successfully for a few years. How did this renaissance in implantology come about?

There has been a massive shift in technology, especially in terms of materials, surface design and restorative con-



Fig. 1: Dr Jens Tartsch, Founding President of the European Society for Ceramic Implantology (ESCI).

cepts. The bad reputation the material once had, owing to very high fracture and loss rates, is, therefore, no longer valid today. As a result of these developments, the ceramic implant is at eye level with the titanium implant today. With this prerequisite, the advantages of the material, such as healthier peri-implant soft tissue or improved aesthetics, are now being discovered, especially in general implantology.

Speaking of prosthetic requirements: what distinguishes ceramic implants from titanium?

Here, one must first distinguish between a one-part and a two-part concept. The restoration of one-piece ceramic implants including impression taking and cementing of the restoration is more similar to the restoration of a natural tooth. Special attention must be paid to the removal of the cement residues, which cannot be reliably guaranteed below 1.5 mm subgingival level. Therefore, the implant shoulder and, thus, the crown margin of this very implant type must be placed at a strict "tissue level". This applies to all ceramic implants whose restoration is cemented. In terms of prosthetic requirements, two-piece ceramic implants are quite similar to titanium implants. Open and closed impressions are possible, and various abutment options increase prosthetic flexibility. A reversible screw connection allows for bonded restorations that are similar to a titanium bonding base, which makes the subgingival placement of the crown margin possible. There is evidence of ceramic implants for single-tooth restorations and smaller bridge restorations. However, internal stresses, too high loads or large overhangs should be avoided.

What are the differences in surgical handling?

Here, too, ceramic implants are similar to titanium implants. The biological principles known from titanium also apply to ceramics—and so do the guidelines from the manufacturers. However, in contrast to titanium, a ceramic implant should never be placed using too much torque, as the material cannot dissipate any overheating that may occur. Furthermore, especially with one-piece implants, exact positioning of the implant axis, high primary stability and no overloading must be ensured during the healing phase. Augmentative measures can be performed in the same way as with titanium implants.

Implant surfaces also play a major role in ceramic implantology. What's your opinion on this?

Ceramic implants with modern microrough surfaces show almost the same osseointegration qualities as titanium implants. It has not yet been clarified, however, how much "roughness" is really required for successful osseointegration, as every surface manipulation induces energy into the material and, thus, carries the risk of material damage due to phase transformation. This is why scientists are currently conducting a lot of research on

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FACTS of
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how to strike a balance between the lowest possible surface treatment and the maximum surface roughness that is required for successful osseointegration. Some successful concepts are already available.

Ceramic implantology exists in an area of tension between evidence-based dentistry on the one hand and an increasing patient desire for the most biocompatible, metal-free and aesthetic dental prosthesis possible on the other. How should the dental industry, which carries out and finances a large part of the research, deal with this subject?

I don't think that there is an area of tension anymore today. First of all, ceramic implantology naturally needs a scientific, but also practically oriented approach. One of the ESCI's declared goals is to implement this approach. Above all, as dentists we have to extensively deal with these topics ourselves and should not leave it exclusively to the industry, since the independence of the results



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is of utmost importance. Ultimately, we hold the responsibility for our patients. Yet, this also means that we must not blindly follow the wishes of our patients, but rather inform them about the correct indication, as well as advantages and disadvantages of the available alternatives. The enlightened patient must be involved in the decision, but

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the correct indication and correct application lies solely within the responsibility of the dentist. When these principles are followed, ceramic implants can be a reliable extension of the treatment possibilities in addition to titanium implants.

For the First ESCI congress, to be held on 11 and 12 October in Zurich, you have attracted a large team of speakers from seven countries. What can the participants look forward to?

The First European Congress for Ceramic Implantology will be held according to the motto “Facts of Ceramic Im-

plants”, since only facts count today when it comes to ceramic implants. The participants can look forward to these facts. The scientific framework with its high-grade speakers is unique in ceramic implantology and provides important background information both for interested newcomers and for already experienced users. In addition to the lectures and a “Meet and Greet the Implants” there will be “abstract and case presentation short lectures”, which will be open to young researchers and ESCI members. The best presentation in its category will receive the ESCI Award. Apart from that, the venue on Lake Zurich and the social setting promise a one-of-a-kind event and a well-deserved break from the daily routine. Further information on the congress and the registration can be found online at www.esci-online.com.

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mechanical, biological and clinical aspects of ceramic dental implants

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