

The first digital implant in the world?

At the IDS (International Dental Show), the Swiss company TRI Dental Implants pulled off a little coup: Featuring the look alikes from the successful "Matrix" trilogy, the company unveiled the first digital implant in the world with its matrix connection specifically developed for the latest digital manufacturing techniques. Prof. Dr. Constantin von See was able to test the new type in pre-clinical research studies and contribute with his expertise during the development. pip spoke to him at the DPU – Danube Private University in Krems in Austria, where he is the director Centre for Digital Technologies in Dentistry and CAD/CAM, as well as being the head of radiology, about the development of the "digital implant", what exactly has changed with it, why abutments can soon be a thing of the past and whether any compromises regarding the aesthetics have to be feared.

pip: Marketing gag or a true breakthrough – this supposedly first "digital implant"?

Prof. von See: I understand your scepticism – much of what is often proclaimed as the next best innovation, may turn out to be clinically irrelevant or just some insignificant modification of a design or some other unessential detail. However, in this case we actually have a completely new approach. The entire process was backwards thinking, which ended in the question: "Do we need the abutment?" This might sound a little bit crazy at first, but it turned out to be a legitimate question, given today's available digital planning capabilities, manufacturing possibilities, and improved materials. The mechanical connection was also re-assessed from the ground up.

pip: What exactly was changed in particular in the concept?

Prof. von See: In today's conventional systems, we are looking at the screw plus abutment plus blending veneering material. Due to the implementation of newer materials and the opportunities of digital planning, as well as the Finite-Element-Analysis, the former retaining screw now has a direct mechanical function. The choice of an abutment and the complete confusion – can it be cast-on or not, standard or individual abutment, shaped or not – is now no longer an issue. Now, you have a direct connection to the prosthetic via the screw. Over the years, we have learned a lot about layer thickness and the application of force and based on this it is only a logical conclusion that this new design and the entire process could not even be presented analogically. The strength of the material – in other words the minimal layer

thickness is being determined digitally, and then directly transmitted to the drills and drill diameters, adjusted and prefabricated accordingly, so it will achieve the specifically necessary stability of the planned restoration. Also, the indexation issues, particularly those of multi-unit applications, will no longer be a problem. Thanks to the literally unlimited design flexibility, restorations from screw-retained full-anatomic CAD/CAM crowns to multi-unit bars and bridges can now be planned directly on the implant.

pip: This means that the application and the manufacturing of abutments would be completely redundant – some companies won't be very happy about this ...

Prof. von See: You will forgive me, if I don't so much think of business models of abutment manufacturers as I do about the

colleagues in the field. From the planning to the implementation, they will be able to incorporate these processes with the new concept entirely inhouse. Also, with this new concept, additive processes, which will be one of the next big milestones in implant prosthetics, in the synthetic and the metal sector, are directly incorporated. Therefore, this approach will significantly increase the efficiency of practices.

pip: Will this significantly improved efficiency then compromise the aesthetics?

Prof. von See: Take the No.1 discussed topic regarding high aesthetics: the cement gap. With this process, it is eliminated completely. Overall, we have a lot less materials and consequently less possibilities for gingival irritations. Nothing will corrode, and nothing will rub against each

other. Every single emergence profile is individually adjustable and can be fully shaped to the absolute optimum. Summarized, the maximum freedom for angulation and indication, as well as the possibility to digitally plan even the soft tissue management not only provides highest longevity of the application, but also allows exceptional aesthetic results.

pip: Thank you very much for your time and this interview. ■



Prof. Dr. Constantin von See.