Fine dentistry and creative engineering go hand in hand

An interview with Dr Kai Zwanzig and Ric Donaca

Many problems in implantology are self-made because biological principles are disregarded. Bone and soft-tissue management should be firmly anchored in the implantologist's portfolio, as stable tissues are the basic prerequisite for implantological success. With the new Stable Tissue Concept from Dr Kai Zwanzig, it is possible to preserve all structures to the maximum, in which the implant system in particular plays a paramount role. The new K3Pro product line from Argon Dental offers the best prerequisites for this. In this interview, Dr Kai Zwanzig and Ric Donaca, Managing Director of Argon Dental, discuss the advantages of this system.

Dr Zwanzig, please describe your motivation to personally commit to the new implantology concept "Stable Tissue".
Dr Kai Zwanzig: I love teeth. My patients love their teeth. If a tooth cannot be preserved, I am not satisfied with "tooth replacement". And no colleague, no dental technician and no patient should be satisfied with "replacements". The focus of my medical practice is to take into account the entire biology surrounding a healthy tooth, set in healthy soft tissue and stable bone. Nothing else should apply to lasting implantological success. Why do the majority of implant manufacturers pay so little attention to these scientifically quantifiable biological factors of the healthy tooth, forcing me to work around the considerable design-related problems of their systems—which I locate in a professionally driven "faster, simpler, more productive"—with all my skills? It is time to commit to a new value orientation in implantology and to pave the way for it. This can only be done hand in hand with an industry partner who ticks similar boxes and is prepared to continue to substantially improve a good product. I have known and appreciated Argon for ten years now.

Mr Donaca, your K3Pro implant system is considered by insiders to be particularly innovative and proven at the same time. Why is that?
Ric Donaca: The principle of our conical implant-abutment connection—a particularly long cone of 3.1 mm with such strong friction that micromovements are excluded, no bacterial colonisation of the implant interior can take place and a loaded retaining screw is basically obsolete thanks to the friction lock—comes from mechanical engineering and was adapted for implantology in my early days in the 1980s.

Fig. 1: Dr Kai Zwanzig (left) and Ric Donaca, Managing Director of Argon Dental.

It is not a pseudo-cone with a flat angle, which actually only corresponds to a phase for sealing between the implant and abutment, but does not prevent movement and continues to load the screw. As a result, the force fit equals the solidity of a monolithic implant, with all the dental advantages of a two-piece system. The innovation lies in the development of a practical prosthetic handling of this special connection, which allows easy try-in, precise height of the crowns even without butt joint and defined forces. But this, too, is now proven.

"It is time to commit to and pave the way for a new value orientation in implant dentistry."

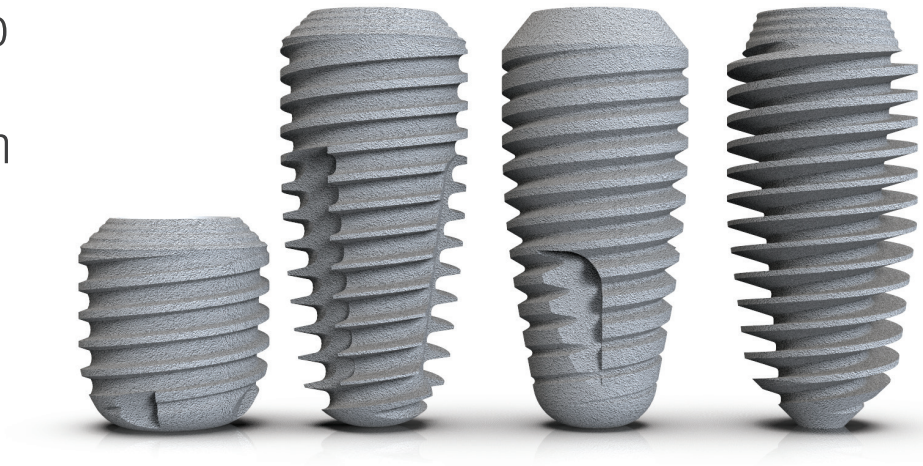

Fig. 2: The K3Pro+ Implant System from Argon Dental.

Your system grew into an extended family over the years with numerous prosthetic options, different thread designs, many lengths and diameters, and last but not least, complete digitisation. How did the further evolution with Dr Zwanzig come about?
Ric Donaca: As an innovation advocate in the context of allogeneic transplants and a strong voice of the young guard of German implantologists, Kai's word has always carried a lot of weight in our company. The sustainable bone and gingiva preservation thanks to K3Pro and the special aesthetics due to subcrestal positioning are a well-known and scientifically proven strength. But in addition to these qualities, Kai immediately recognised the optimisation potential of the system in the aspect of the biology of mucosal and bone regeneration, which we had previously paid little attention to. This is grumbling at a very high level, but the end result shows that it was worth the effort. With K3Pro, we are talking about what is undoubtedly the most minimally invasive, anatomically optimised and tissue-friendly titanium implant on the market.

Dr Zwanzig, please describe the Stable Tissue Concept to our readers.
Dr Kai Zwanzig: It is not a product alone that is in the foreground, but a philosophy. An implantological overall view that brings all aspects—surgical and prosthetic challenges and procedures, indication and anatomy, implant system used and specific patient wishes—into harmony. The ultimate goal is patient satisfaction. This takes into account aesthetics—beautiful teeth and not "dentures"—and sustainability. A beautiful, reliably healthy implant for a lifetime! Colleagues who adopt this philosophy will also be on the winning side economically. Of course, this also requires questioning outdated, partly industry-driven methods and habits, as well as the willingness to change paradigms. Even for the complicated case, it is always true that you have to have the perfect end result in front of your mind's eye. I always create bone if it is required for this, but I always think of the soft tissue first. I have to question what will harm the soft tissue and consistently sort this out: Any implant design with cortical pressure is likely to irritate the bone, which can lead to recession. It does not matter whether the emergence profile is wide or narrow, with or without a platform switch, polished or surface-treated margin. It should be noted that implants with a short taper must have thickenings to cope with peak loads (often at the shoulder) due to the unfavourable load distribution, which is surgically disadvantageous.

Good results are possible with bone level implants without a cortical anchorage thread, but only with strict adherence to the so-called three-millimetre rule, which states that one must have at least 3 mm of stable gingiva over the bone and implant shoulder to seal the implant. This requires a high effort in soft tissue surgery. And even then, a predictably good long-term result is only possible if the load distribution of the prosthetics is perfectly balanced. Tissue-level implants and a perfect final result, on the other hand, are ruled out from the outset because of the unsatisfactory aesthetics and have long been out of date.

Mr Donaca, what is the solution?
Ric Donaca: A subcrestally placed implant is the solution, with a shoulder that slopes down toward the abutment exit and is completely surface-treated according to the OsteoActive principle, inviting the bone to seal it permanently during regeneration. This is because, thanks to the stable long cone, the implant not only remains tight, but the abutment also remains absolutely motion-free. And thus bone and soft tissue remain permanently stable, there is no longer any bacterial point of attack. The long-term results prove us right, but I would like to emphasise that this is only possible if an implant such as the K3Pro is optimised for subcrestal use in

every respect. This principle opens up every conceivable option for prosthodontists thanks to the subcrestal implant position. Narrow, particularly tissue-friendly emergence profiles are clearly the trend.

Dr Kai Zwanzig: From a scientific point of view, it should be added that studies have shown the following: It is not so much the microgap with the bacterial pumping effect in the implant–abutment connection that is problematic, but rather the constant movement between abutment and implant, however minimal. The objective for bone and gingiva preservation is to completely eliminate this movement. This has been achieved with K3Pro—hence my personal commitment to this philosophy with full conviction. As a friend of biological dentistry, I must not forget that thanks to this principle, no titanium oxide abrasions are released and the organism is not gradually contaminated with them.

> "The practical handling with complete preservation of the biology of bone and soft tissue is in the foreground."

So what is the innovation that came out of the collaboration?
Dr Kai Zwanzig: By exploiting the entire as yet undiscovered biological potential of K3Pro. We proceeded step-by-step. I let my first cases heal in the classic closed subcrestal way and regretted having to "search" for the cover screw in the tissue when uncovering it. With the use of the high cover and membrane fixation screw of 2 mm height, everything changed. I was thrilled with the stable bone and tissue channel that formed completely over the implant shoulder, and so this became my personal standard protocol. The goal was not only to take the impression and gingival design directly through this tissue channel of unique biology, but also to have the abutments precisely pick up this geometry, thus providing the maximum stable support of the bone over the entire length of at least 2 mm. This was unique among all implant systems known to me and also takes into account recent scientific findings that lengths of 8 to 9 mm are completely sufficient and only in immediate implantations more bone should be grasped apically due to the alveolar anatomy.

Ric Donaca: For this we had to extend all the impression posts, gingiva formers, scanposts and, above all, the abutments to an emergence length of 2 mm. In addition, with regard to the transfer aids, we switched from a butt-joint principle on the implant shoulder to impression-taking purely via indexing by means of a hexagon and depth stop in the implant, because at this stage the cone fit is not yet desirable; practicable handling with complete preservation of the biology of bone and soft tissue is paramount. This is how the new prosthetic line of the K3Pro was developed within the framework of the Stable Tissue Concept—it stands for one millimeter more. Quite a challenge for the engineer.

Dr Zwanzig, is it difficult for implanting people who are changing over to this new system to adjust to it?
Dr Kai Zwanzig: It always takes conviction to decide to fundamentally change learned techniques. With regard to the 2 mm subcrestal positioning, experience in implantology is of course an advantage. But thanks to Argon's optimised instrumentation and optional digital planning in the full-guided procedure, the changeover is easy. As soon as you have gotten rid of old habits of placing the implant supra- or equicrestally and instead place it deep and leave it to biology with the high healing screw, you immediately recognise the superiority of this concept. Such reliable and rapid osseointegration is unparalleled! Especially with immediate implant placement. Uncovering, gingiva shaping, transferring or scanning is extremely simple, since the dimensions of this healing screw already specify the appropriate components. Only the gingival height needs to be determined. My technicians are delighted with the innovative model analog, which completely eliminates the handling disadvantages of a friction-fit tapered connection and makes prosthetic work as easy as with a butt fit. And last but not least, there are our courses under the sign of the Stable Tissue Concept: At Argon in Bingen or at my place in Bielefeld.

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