Does the occlusal concept change with the number and position of implants?

3 questions for Prof. Johann Müller

The 18th European Symposium of BDIZ EDI was held in Stockholm in 2025—our editorial team has previously shared their impressions of the event with readers. Below, we present key content from Prof. Müller's lecture in the form of a three-question interview.

Prof. Müller, as a follow-up to your lecture in Stockholm, we would like to ask how the number of implants influences the choice of occlusal concept, particularly in comparison with conventional prosthetic restorations.

In principle, the same rules apply when selecting an occlusal concept, whether or not implants are involved, as in "classical" prosthodontics. However, when planning the number and position of implants from the perspective of occlusion, it is advisable to proceed in the opposite direction. First, determine the occlusal scheme required for each individual case, then define the necessary number (and positions) of implants to achieve it. For example, the German Society for Dental, Oral and Craniomandibular Sciences (DGZMK) recommends that a shortened dental arch should be avoided in cases of bruxism, functional disorders or reduced anterior tooth contact.

What role does implant positioning (anterior versus posterior) play in deciding on a particular occlusal scheme, and are there clinical guidelines to follow?

As previously mentioned with regard to the static occlusion concept, the initial consideration is whether a shortened dental arch can be justified in the individual case. The positioning of the implants is then largely guided by the same criteria in terms of statics and (prosthetic) kinematics. The classic criteria and considerations relating to the "abutment value" are supplemented by additional parameters relating to implants, such as bone quality and quantity, implant dimensions and implant material. Fundamentally, however, these are the same long-established, recognised and clinically proven guidelines.

Does the recommendation for static and dynamic occlusal contacts change depending on the number and distribution of implants, and how is it implemented in daily practice?

Regarding dynamic occlusion, the objective is to establish anterior guidance with the prosthetic restoration. More precisely, and preferably, we speak of anterior control, as this is a neuromuscular rather than a purely mechanistic process. There are excellent studies on this topic, including work by J. Levy and K.-H. Utz, that demonstrate that forces within the entire masticatory system can be guided and reduced in this way. Although this sensory feedback is reduced in implants compared with natural teeth, it is still present. This should be considered when planning implant positioning in the anterior region. For static occlusion, and thus for the posterior region, the previously outlined criteria continue to apply.

However, I would like to highlight one aspect of the occlusal concept: geriatric dentistry has clearly demonstrated that the capacity for adapting to occlusal changes diminishes with age. Therefore, major alterations to existing occlusal relationships should be avoided in elderly patients whenever possible, even if these relationships do not fully correspond to the established concepts described above, for example in cases of severely worn denture teeth. In such cases, it is often better for the patient if existing prostheses are simply stabilised by the insertion of implants, rather than opting for a complete remake of the prosthetic restoration.

Thank you very much, Professor Müller, for these insights into the world of occlusion.

This interview was conducted by Anita Wuttke, Editor-in-Chief.