From traditional to innovative procedures in oral implantology

3 questions for Prof. Dr Hakan Özyuvacı

At the European Symposium in Stockholm, Prof. Dr Hakan Özyuvacı spoke on topics ranging from traditional to innovative techniques in implant therapy.

Prof. Özyuvacı, could you explain from a historical perspective how traditional surgical approaches in oral implantology (such as two-stage implants) form the basis for modern innovations in implant design and implant placement?

Historically, traditional surgical approaches—particularly the two-stage implant protocol—formed the biological and clinical foundations of modern implantology. By emphasising predictable osseointegration, controlled loading and soft-tissue stability, these methods helped practitioners understand how implants heal and integrate with bone. This knowledge has had a direct influence on today's innovations, including advanced surface designs, immediate loading concepts, digital planning and minimally invasive insertion techniques. Essentially, modern implant practices are based on the principles first established by traditional two-stage implant surgery.

To what extent have digital technologies such as 3D imaging, guided surgery and CAD/CAM prosthetics changed the accuracy and predictability of implant procedures compared to conventional methods?

3D imaging—CBCT—enables detailed visualisation of bone anatomy, allowing the practitioner to identify important structures and plan the position of implants with much greater precision. Guided surgery transfers this digital plan directly to the clinical environment, minimising surgical deviations and reducing the risk of complications. CAD/CAM prosthetics further improve predictability by enabling restorations that are tailored to the patient's anatomy, improving fit, occlusion and aesthetics. As a result, these digital tools reduce human error, shorten treatment times and lead to more consistent and reliable implant outcomes.

What are your prospects regarding new techniques such as tissue engineering, biomimetic materials and immediate loading protocols, which are redefining treatment outcomes for patients and the long-term success of dental implants?

New techniques such as tissue engineering, biomimetic materials and immediate loading are likely to significantly improve both patient outcomes and long-term implant success. Tissue engineering could enable faster and more predictable regeneration of bone and soft tissue. Biomimetic materials can improve osseointegration and reduce complications. Immediate loading protocols, supported by stronger implants and better digital planning, will shorten treatment time while ensuring stability. Together, these innovations point to more biological, faster and longer-lasting implant solutions in the future.

Thank you very much, Prof. Özyuvacı, for this overview of the past, the present and the future in oral implantology.

Interview: Anita Wuttke