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State-of-the-art technology in implant dentistry: how far have we come ?

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Implant dentistry has come a long way since Per-Ingvar Branemark's discovery of osseointegration. As the treatment became more predictable, the benefits of therapy became evident. The tremendous demand for implants has fueled a rapid expansion of the market.

Recently, computer-aided-design and computer-aided-manufacturing (CAD/CAM) technology has significantly enhanced both surgical and restorative aspects of implant dentistry. Therefore, CAD/CAM applications have surged in the market over recent years.

Surgical aspects: 3-dimensional implant planning softwares and cone beam computerized tomography (CBCT) scans can be used to virtually plan implant placement. The transfer of this plan to the patient can be achieved using a rapid prototyping stereolithography (SLA) in a CAD/CAM type process. SLA uses a digital plan to light polymerize resin one layer at a time (usually 0.1mm thick resin layers), until the surgical template is made to the specification of the patient and the planned implants. These patient specific surgical templates allow for exact implant placement as dictated by the virtual implant plan.

Restorative aspects: CAD/CAM fabrication of bars and frameworks has resulted in elimination of distortion, better fit, fewer fabrication steps, and faster turn-around. Other advantages of a CAD/CAM titanium framework include its light-weight, biocompatibility, and low cost.

The aim of this presentation is to show how to use state-of-the-art technology (cone-beam computerized tomography, 3-dimensional implant planning softwares, stereolithographic surgical guides, CAD/CAM milled titanium frameworks). In this lecture, several cases will be presented step-by step. What can be achieved with these methods and proper training will be shown to the attendees.

Biography

Ilser Turkyilmaz has been working as an Assistant Professor in the Department of Prosthodontics at the University of Texas Health Science Center in San Antonio, Texas since 2008. Dr. Turkyilmaz has also been serving as the Director of Dental School Implant Clinic for 2 years. He has currently 61 scientific articles published in peer-reviewed journals. He is currently serving as an editorial board member or reviewer for several dental journals. He earned Diplomate status within the International Congress of Oral Implantologists in 2011, which is the highest honor showing efforts in education, research and actual clinical experience with dental implants.

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