Computer aided surgery for immediate implant treatment in a complex case

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Initial findings

At the 2006 Frädent World Congress, the example of a young patient with severe periodontitis was presented as a poster. The treatment followed the motto „Beauty and Speed“: After losing all the teeth in her upper jaw and undergoing a bilateral sinus lift, 8 XiVE implants were inserted according to a med 3 Dylan and immediately equipped with a fixed bridge. Five months later, permanent prosthetic loading took place with all-ceramic zirconium oxide abutments and a ceramic veneer zirconium oxide bridge with galvanic caps for passive fit.

The situation in the lower jaw had been stabilized over the medium term through periodontal treatment. Encouraged by the result of the treatment of the upper jaw, the patient agreed to the direct transition from the bridges on the periodontally compromised abutment teeth of the lower jaw to bridges supported on implants.

Using the drill guides, the implant positions were marked on the model and a temporary bridge was prepared for immediate loading.

3 D planning

With the data records, the Materialise company stereolithographically created a set of drill guides (surgiguides) for 3 different drill diameters.

Using SIMplant software, 8 XiVE implants for the lower jaw were planned in an online dialogue between surgeon, prosthodontist and dental technician.

The positions of the implants were chosen such that, during surgery, initially 4 abutment teeth remained to ensure dental support of the drill guide.

Using the drill guides, the implant positions were marked on the model and a temporary bridge was prepared for immediate loading.

Implantation and immediate loading

Implantation was performed under local anaesthesia. First, the teeth to be replaced with immediate implants were extracted and the seat of the drill guides on the remaining teeth was checked. Then, based on the drill guides, 8 XiVE implants of the planned length and diameter were inserted according to the standard protocol. Finally the remaining teeth were extracted and the necessary lateral augmentations as well as the area of the alveolar defects were covered with autologous bone, Bio-Oss and BioGide membranes, followed by tension-free closure.

The prepared provisional bridge was adapted via the temp base caps, trimmed and temporarily cemented.

Permanent prosthetic loading

Permanent prosthetic loading took place 3 months later with individual all-ceramic zirconium oxide abutments and cemented zirconium oxide bridges with ceramic veneer in small sections.

Discussion

The 3D planning based on a CT or DVT using SIMplant software allows optimal and quick treatment: The implants are inserted in anatomically and prosthetically perfect positions and axes, and the temporary prosthesis labside can be easily adapted and incorporated chairside. Selection of the permanent prosthetic abutments is also possible during the planning stage.

Of paramount importance for the exact surgical implementation of the 3D planning is the accuracy of the drill guides. Hence, the ExpertEase system allows perfect planning and realization of implant surgery and prosthetics even in most complex cases.

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Literature:

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