



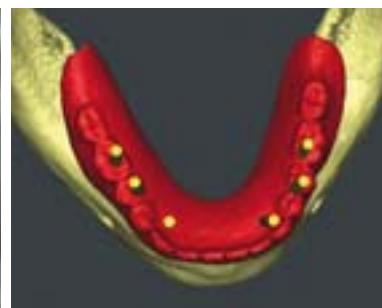
*a good plan is half the job*

ExpertEase – Planned Perfection

| Dr. Dr. Steffen Hohl



1\_A 73-year-old patient had problems with adhesion of the lower denture



2\_In the occlusal view the position of the implants in relation to the teeth can be clearly seen

**ExpertEase is a tool that the surgeon can use for planning the treatment of very complex cases. The system also helps make wishes and ideas reality with the required accuracy. An example will demonstrate some of the many interesting possibilities of the system.**

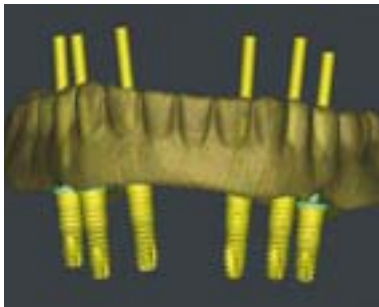
#### **THE INITIAL SITUATION**

A 73-year-old woman in good general health retained a reduced number of teeth in the maxilla and mandible (Fig. 1). The partial denture in the mandible was causing problems. For periodontal reasons the lower front teeth were removed to improve oral health.

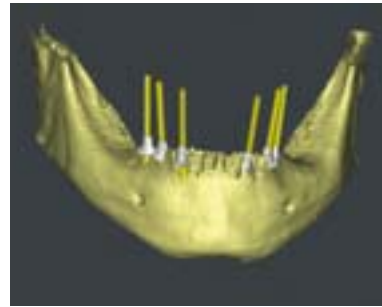
### COMPUTER WORK

The planning process is referred to as backward planning, working from the desired result to the beginning. The most important consideration at the start is: "What should the final denture look like?" The dentist must decide whether the superstructure will be fixed, partially removable or removable. Among other considerations, this will have an influence on the number and distribution of implants.

The use of CT or DVT images in combination with planning software is becoming more and more common and in my practice it has become standard procedure with complex restorations. The subsequent denture, i.e. the position of the teeth that must be replaced, determines the alignment and positions of the implants. A scanning template or a specially prepared prosthesis is required to transfer the tooth position to the virtual image (Fig. 2). The number and distribution of the supporting pillars (implants) depends on the nature of the subsequent restoration (Fig. 3). A telescopic porcelain bridge is planned for the patient. Six implants were defined for anchorage. The distribution of the abutments was decided by two factors: the support polygon should be as large as possible (Fig. 2) and it should offer optimum distribution of forces. The stable support of the prosthesis is important to prevent micromovements of the implants  $< 100 \mu\text{m}$ . Another point that must be considered



3\_Hiding the mandible makes the relation of the implants to the teeth clear



4\_Without the prosthesis the unfavorable crestal margins around the implants are visible



5\_The sectional image clearly shows the position of the implant within the bone



6\_The reduction guide with the partial model of the mandible

with reference to the coupling with tapered abutments is the resistance to tensile forces. This is derived from the friction, which is influenced by the height of the taper, the angle of the taper and the area of congruent surfaces.

After defining the position of the abutments, the diameter and the length of the implants must be determined with reference to the bone volume and the distance to the vestibular surface of the jaw. Xive implants with a diameter of 3.8 mm and a length of 13 mm were selected for the patient. The implant is taken from the database and inserted into the virtual image and it is aligned in the bone (Fig. 4). The implants should be vestibularly oriented relatively strongly with reference to the jaw axis. To improve the jaw geometry it was necessary to resect the bone in the anterior section. This procedure ensured the required alignment of the implants for the patient (Fig. 5).

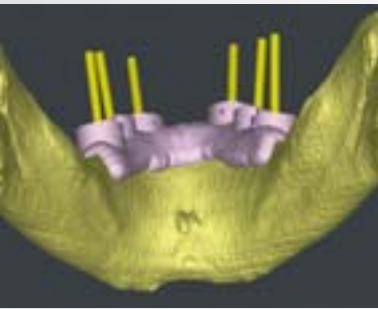
A reduction guide was necessary for conducting the resection as defined by the planning. The fit is excellent, as shown by the plastic model (Fig. 6) and the clinical situation (Fig. 9 to 11).

A bone-supported surgical guide was prepared on the computer to match the positions of the implants (Fig. 7). The ExpertEase surgical guide is manufactured in a fast-track procedure, for reasons to be explained later. This means that its extent is accurately defined in the virtual planning process and it can be reduced to a minimum volume (Fig. 8).

#### THE SURGICAL PROCEDURE

A central part of the surgical procedure is to restrict flap debridement to a minimum. This was considered at the stage of planning the bone-supported surgical guide – fast-track design (see above).

Preparation of a mucoperiosteal flap leaves no alternative to partially interrupting the blood supply of the bone region in question. This results in bone resorption. The minimally exposed insertion is better in many cases than wide-area debridement of the mucosa. If a flap is required, it should be as small as possible. After debridement of the mucosa the reduction guide is positioned and screwed to the



7\_The surgical guide is also planned with ExpertEase



8\_The finished ExpertEase surgical guide in the "fast track design"



9\_The reduction guide in situ and anchored to the bone with two retaining screws



10\_The resection of the alveolar ridge is conducted with a reciprocating saw



jaw (Fig. 9). A reciprocating saw inserted through the guide was used for resection of the alveolar ridge (Fig. 10 and 11). The bone-supported ExpertEase surgical guide is screwed to the jaw. The guide indicates the direction of the drills, which were fitted with a depth stop (Fig. 12).

The occlusal view (Fig. 13) clarifies why Xive 3.8 implants were used. As shown above, the implant position must be oriented to the position of the teeth to ensure optimum positioning of the subsequent denture. In this case it was necessary to angle the implants very significantly in the vestibular direction to ensure that a sufficient thickness (1.5 to 2 mm) of the vestibular bone wall can be maintained. The control image (Fig. 14) shows that the implants could be positioned with the guide as planned (Fig. 3).

The implant healed in a submerged position. The flaps were shaped accordingly and fixed with an intramucosal suture (Fig. 15). This new suturing technique yields a smooth, well-adapted wound edge with no visible punctures. Particularly after implant placements the gingiva can be closed to ensure that a fixed gingiva is generated above the implant bodies. This adds additional height of at least 2 to 3 mm gingival tissue and the gingiva above the implant is fixed. The telescopic porcelain bridge was delivered two months after implant placement (Fig. 16). ■



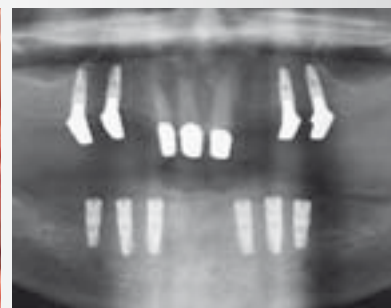
11\_The result of the resection



12\_The surgical guide is screwed to the jaw for ease of working



13\_The implants had to be angled very far in the vestibular direction, however the vestibular bone lamella is sufficiently strong

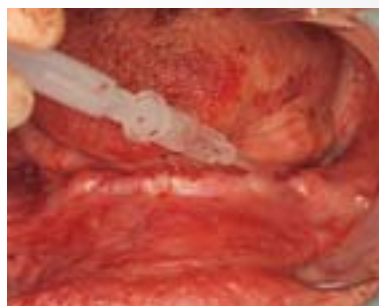


14\_Status after successful placement



**Dr. Dr. Steffen Hohl**  
DIC /Dental Implant Competence  
Estetalstr. 1  
21614 Buxtehude/Germany  
Buxtehude – Hamburg – Rostock  
www.dr-hohl.de  
mail@dr-hohl.de

**In cooperation with**  
**ZM Präzisionsdental GmbH**  
Milja Mitrovic, Aurica Zothner,  
Christina Wels, Rene Friedrich  
Breitestr. 16  
18055 Rostock/Germany



15\_The intramucosally placed suture fixes the mucosa and ensures smooth and well-shaped wound margins with no visible needle holes



16\_The telescopic porcelain bridge in situ