



# *complex task – autogenous result*

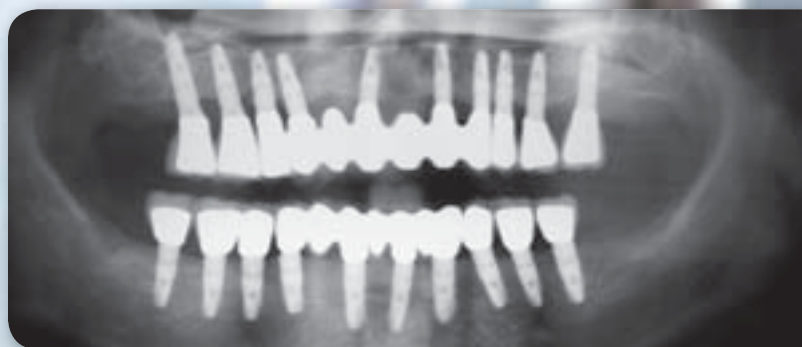
Secure implant placement with Xive –  
even with systemic disease

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## **INTRODUCTION**

The serious atrophy of the alveolar ridge is in itself a major challenge for the implantology team. If systemic diseases are also present, all the ability, experience and knowledge of materials of the medical team and the dental technician must be brought into play. Interdisciplinary cooperation is absolutely essential right from the start in complex clinical cases. All persons involved are in agreement on the goals of the therapy:

- Manufacture of a functional and esthetic superstructure
- Sustainable management and treatment of the systemic diseases to improve dental and general health
- Development of optimum guidelines for dental follow-up

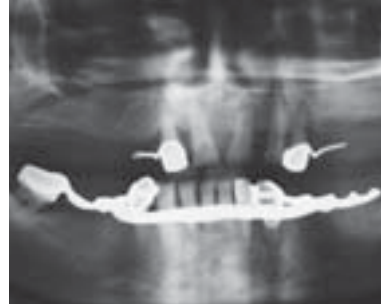




1\_Loosened teeth and insufficient prosthetic restoration form the initial situation



2\_The too short lower face does not provide enough support in the side tooth region



3\_Bone quality and quantity are very restricted



4\_Removal of bone block from the tibia with a Frios MicroSaw

Restoration with implants is complex for patients with systemic diseases and in some cases unpleasant for the patient. Added to this is the fact that the complex oral rehabilitation is generally extended over a long period. The patient therefore – quite rightly – expects a predictable result if at all possible for the dentist. Over the previous three years in our practice we have compiled our experience with a total of 37 patients with extraorally harvested autogenous bone grafts for augmentation of the seriously atrophied alveolar ridge. The majority of patients suffered from various systemic diseases. All patients were between 46 and 60 years old. When the life expectancy and the restoration of quality of life are considered, invasive procedures must be considered appropriate and therapeutically suitable or necessary.

#### **XIVE IN THE LEAD ROLE**

The implants are the essential component in difficult conditions once appropriate technical equipment and effective medications have been taken into account. The implants must be absolutely reliable under the most difficult conditions. There is a variety of requirements for difficult initial situations and comprehensive augmentation procedures. The implant must be suitable for single-stage and two-stage procedures, delayed and immediate implant placement with appropriately high primary stability. The availability of different prosthetic abutments for bridges and single-tooth crowns is also essential. These are the reasons for our selection of the Xive implant system. The implant design was the major reason for our decision in favor of this system. The condensing thread creates the necessary compression and therefore stability. The Friadent plus surface promotes fast osseointegration. The accurate manufacture provides a stable internal-hex connection between implant and abutment.

#### **THE CASE**

We use the example of a specific patient to describe the complex restoration of the maxillary and mandibular dentition starting from a difficult initial situation using Xive implants.

#### **THE INITIAL SITUATION**

The 58-year-old patient suffered from diabetes II and stage 3 hypertension (high blood pressure with values up to 230/110 mmHg). Only a few teeth remained in her maxilla and mandible as a result of severe generalized chronic periodontitis (Fig. 1). The existing prosthetic restoration was functionally insufficient and esthetically unsatisfactory. The intraoral diagnostic results were not encouraging but also not discouraging and there were some grounds for optimism. All problems could be resolved with appropriate care in planning and therapy.

The patient had a Kennedy class I (reduced dentition on both sides) in the mandible and maxilla. The remaining teeth were not worth retaining because of the degree of looseness. The bottom region of the face was reduced as a result of the lack of support in the posterior tooth region. This was clearly visible in the region of the corner of the mouth with the wide lips (Fig. 2). The patient's dearest wish was a fixed restoration.

The jawbones were seriously horizontally and vertically atrophied (Fig. 3). The x-ray image showed pressure in the maxillary sinus typical for the age of the patient. The atrophy of the alveolar ridges was classified as type C and D (serious to very serious atrophy) in accordance with the 1985 classification of Misch and Judy. The recommended treatment was augmentation. The x-ray image clearly showed that there was insufficient intraoral bone substance available for grafting for



5\_The graft removal site on the day the sutures were removed



6\_The completed denture in situ



7\_A satisfied patient with restored quality of life



8\_Check OPG immediately after delivery of the definitive restorations

the required autogenous measures. In cases such as this we prefer to harvest autologous bone grafts from the tibia. This region is easy to access surgically and postoperative pain is relatively low.

The desired fixed restoration could not be implemented without sinus elevation and horizontal augmentation. The essential relationship of trust between patient and dentist was established in a detailed consultation session. All phases of the surgical procedure were explained to the patient in detail. She was also informed of the possible complications that could result because of her systemic diseases.

#### **SUCCESS THANKS TO PATIENT WORK**

We worked with the physician to stabilize the diabetes and hypertension as much as possible before the surgical procedure. The patient was given comprehensive periodontal treatment at the same time. Once a state of periodontal stability free of inflammation had been reached, we were able to conduct the first surgical procedure in January 2006.

The bone situation found during surgery confirmed the x-ray diagnosis. Therefore, a bone block was harvested from the cortical bone of the tibia as planned under local anesthetic and intravenous sedation. A Frios MicroSaw according to Professor Khoury and an osteotome were used for this purpose (Fig. 4). The harvested bone was crushed and stored under suitable conditions. After extraction of teeth 12 to 23 an external sinus lift was conducted via a vestibular window and the alveolar ridge in the maxilla and mandible was laterally augmented. We used the prepared autogenous bone material. Then we placed two temporary implants in the maxilla and

delivered a soft, padded temporary denture. No complications were encountered during the healing phase. One week later the sutures could be removed from the oral cavity and another week later the sutures at the donor site were also removed (Fig. 5).

The second procedure was four months later. The temporary implants were removed first and then the Xive implants were placed in the maxilla and the posterior tooth region of the mandible. We were able to place the implants in well regenerated bone with high primary stability. Interim implants were used again for fixing the temporary dentures to enable submerged and unloaded healing of the Xive implants.

In the fall of 2006, after another four months, the front teeth in the mandible were extracted. The Xive implants placed here were immediately loaded. The patient received an implant-supported long-term temporary denture in the maxilla and mandible. One year later (fall 2007) we started work on the definitive denture, which consisted of single-tooth crowns and ceramic-veneer bridges. The frameworks were made of a high gold-content alloy (Fig. 6). The patient was very satisfied with the result considering the circumstances and in spite of the long treatment period (Fig. 7). She was particularly pleased that she was able to have a fixed prosthetic solution. With the unfavorable initial conditions this was only possible because the rehabilitation was planned by the team and the result was predicted for the patient. We were able to improve the appearance and phonetic and chewing capacity significantly. The patient's quality of life has been greatly improved for future years.



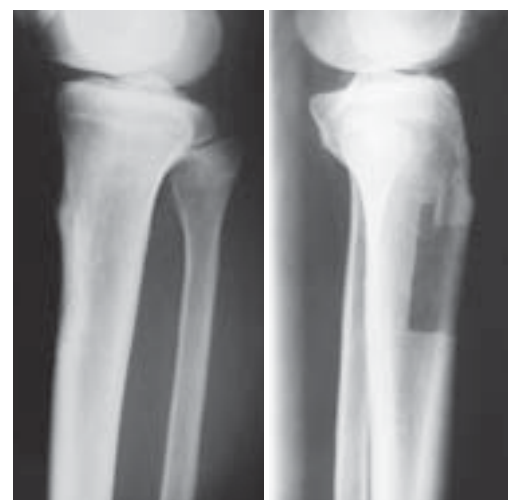
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The follow-up OPG immediately after delivery confirmed that the height of the alveolar ridges had remained absolutely stable in the region of the delayed and immediately placed Xive implants during the almost two years of loading (Fig. 8). At this time the harvest site in the tibia was completely healed and its morphology and function was completely restored (Fig. 9–12).

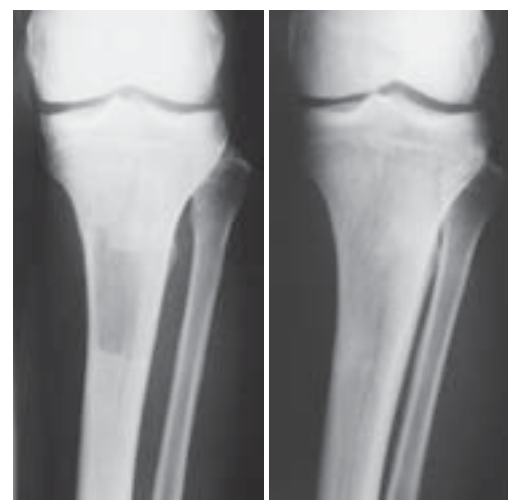
#### **CONCLUSION – PREDICTABLE RESULTS EVEN UNDER AN UNFAVORABLE INITIAL SITUATION**

We found it very significant that in all cases that we treated we could achieve consistently good results even with the immediately loaded implants in spite of chronic generalized periodontitis and diabetes mellitus. We attribute this to many factors, including the design of the Xive implants.

Implant supported, functionally and esthetically superior dentures are a significant challenge for older patients with systemic diseases. Clinicians working in geriatric dentistry must be capable of developing considered, technically correct, creative and innovative solutions. This requires not only close cooperation with colleagues in other specialties and the dental technician but also a flexible implant system like the Xive system that we used here. This is the only way of finding a suitable solution for every situation. ■



*9\_Postoperative x-ray image of the tibia with easily detectable removal site*



*10\_After one year the bone at the removal site is virtually completely regenerated*