

Total Fixed Implant-prosthetic Reconstructions in the Maxilla

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Introduction

Complete fixed reconstructions of the entire dental row still are a great esthetic challenge in implant dentistry. The esthetic demands are frequently assessed by the simple fabrication of a facial mask. However, for hygiene reasons this always requires a removable superstructure. But most patients consider this no

more than a compromise solution as the removable denture makes them feel old and exhausted.

The aim of this poster is to illustrate the therapy protocol in those cases where different ways of augmentation techniques have to be used to create a suitable implant position to fulfill esthetic needs.



Nowadays, removable dentures are more or less a compromise for the patients who want a fixed restoration. However, they are still the usual prosthetic solution in the maxilla, as a malpositioning of the implant does have no effect on the overall esthetics.

Material and Method

The 46 year old female patient had been treated with a conventional telescopic restoration for years. This restoration made her feel uncomfortable, old and not attractive and so she asked for a fixed restoration. The implant positions were evaluated and planned

thoroughly by a CT scan with the CT module of the FRIACOM Dental Office software (DENTSPLY Friadent, Mannheim, Germany) (fig.1). This evaluation showed that the patient could be treated with a tooth-to-implant restoration, i.e. each missing tooth is replaced by an implant.

Surgical Procedures:

The implant site is opened by an incision at the mid-facial of the ridge and three vestibular relief incisions (fig.2). After fenestration of the sinus, the mucosa at the sinus floor is loosened from the bone with appropriate elevators (FRIOS[®] Sinus Set, DENTSPLY Friadent) (fig.3), thus creating a cavity which can be filled with bone chips (sinus floor elevation technique) (fig.4). Now the alveolar ridge is flated by bone splitting. The bony alveolar ridge is incised with a rotating diamond disk (MicroSaw, DENTSPLY Friadent) (fig.5). Vestibular reliefs are created, the incision is protracted with a manual chisel (Ustomed GmbH, Tuttlingen) (fig.6). Prior to surgery, the model and CT evaluation were used for the production of a surgical template which is applied for the final positioning of the implants (fig.7,8). An additional use of bone condensers (DENTSPLY Friadent) creates an implant congruent cavity in the flated area while at the same time condensing the surrounding bone (fig.9). In case of a fracture of the vestibular lamella, the exposed bone lamella can be readapted with bicortical screws (Mondeal Medical Systems GmbH, Tuttlingen) (fig.12,13). 8 XiVE[®] implants (DENTSPLY Friadent) were inserted in the maxilla. This system offers a superior primary stability especially

in weak bone. Due to the self-tapping thread a sufficient primary stability can even be achieved if the implant is only fixed in the apical third in the bone. This is especially necessary in the region of the fractured lamella in order to avoid a two-stage procedure with augmentation and implantation. The cavity in the region of the Sinus maxillaris and the fractured lamella is filled with a mixture of bone and bone grafting material (ALGIPORE[®], DENTSPLY Friadent). In order to stabilize the distal region of the alveolar ridge, an additional membrane (Gore GT9, Gore GmbH, Putzbrunn) was drawn over the defect and fixed with titanium tacks (FRIOS[®], DENTSPLY Friadent) (fig.14). A tension-free closure of the wound was reached by relieving the mucoperiosteal flap with a periosteal flap with quilted sutures (fig.15). During the 6 months healing time the patient was treated with a temporary bridge construction covering the remaining teeth. Afterwards impressions were taken and the restoration was produced by Dental Plus GmbH in Wiesbaden (fig.17-22).

(With the exception of regio 15 and 16, all implants in the maxilla and the mandible could be treated individually and without splinting in a tooth-to-implant solution. In regio 15 and 16 an additional implant would have been necessary; however, this would have interfered with the transcortical fixation screw.)

Results

Due to improved procedures in bone surgery and implant prosthodontics, fixed reconstructions in the maxilla are a promising alternative to conventional bar supported implant treatments. To meet all esthetic requirements, primary fixed reconstructions must be developed with the subsequent prosthetic solution in mind from the earliest stage of planning. As the alveolar ridge degenerates after tooth loss,

in most cases its original shape has to be reconstructed with augmentative procedures. This is above all necessary to reach an esthetically correct implant position. In many cases a broadening of the bone by bone splitting leads to sufficient results. An additional supporting bone graft can be necessary. However, as this causes bone defects at the site of removal, locally limited methods of augmentation should be preferred.



Fig. 1

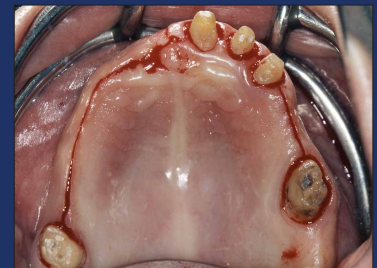


Fig. 2

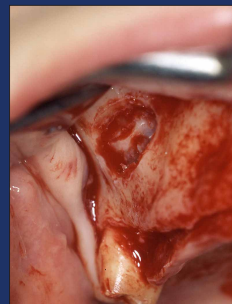


Fig. 3

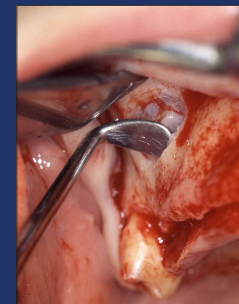


Fig. 4

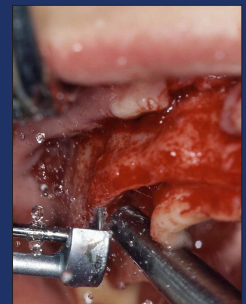


Fig. 5



Fig. 6



Fig. 7

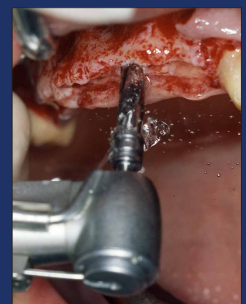


Fig. 8

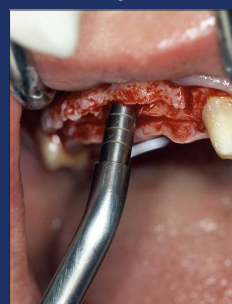


Fig. 9

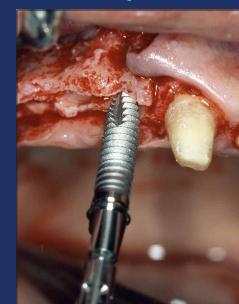


Fig. 10

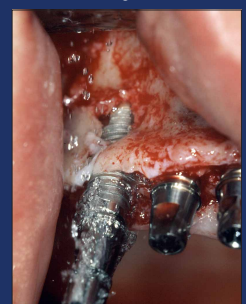


Fig. 11

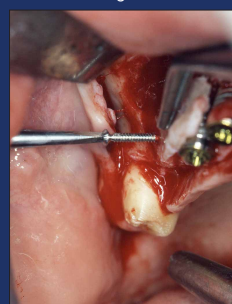


Fig. 12

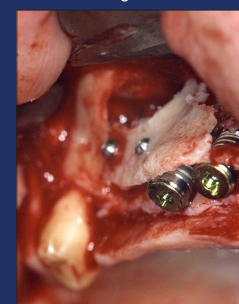


Fig. 13

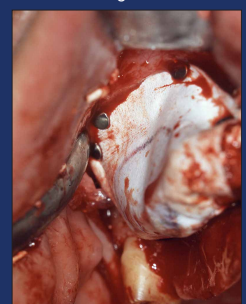


Fig. 14

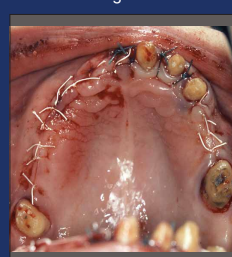


Fig. 15



Fig. 16

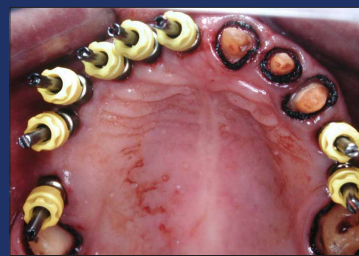


Fig. 17



Fig. 18



Fig. 19



Fig. 20



Fig. 21



Fig. 22