

implants

international magazine of oral implantology

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_user report

Early loading of root form and conical implants with a sand-blasted large-grit acid-etched surface: A 6-year clinical follow-up

_social events

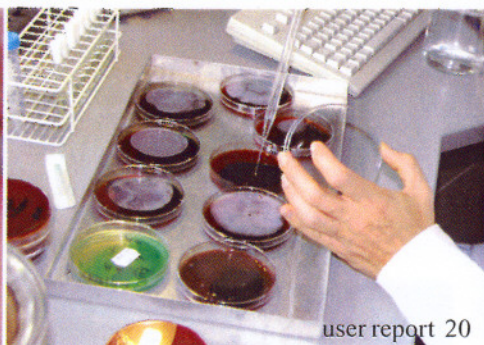
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An alternative prosthetic solution after loss of three out of six maxillary implants

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Fig. 4

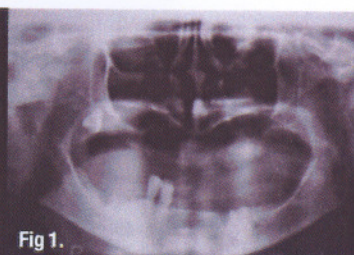


Fig 1.

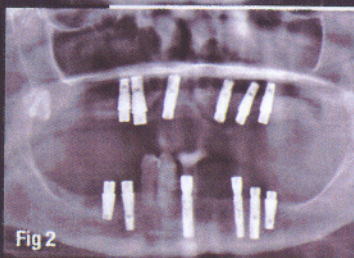


Fig 2

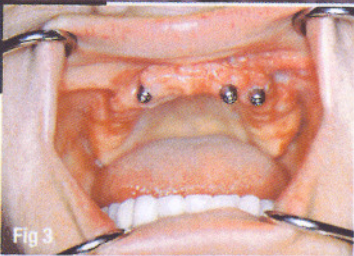


Fig 3



Abb. 5

_Abstract

Implant is generally a successful treatment modality. However, implant losses can cause difficulties concerning the prosthetic treatment. While a single implant loss does not change the treatment course by itself, more than one loss can make, for instance a fixed

restoration, which was promised to the patient in the beginning, impossible. This article describes a case where three of the maxillary implants were lost and a different prosthetic solution for the situation was applied. Since the 60 year old female patient was insisting on a fixed denture, at least in the anterior, a detachable anterior part which was connected with BEGO's Ancora® precision attachments to the cast framework denture was constructed. The 16-month result was encouraging, but to be able to draw conclusions about the reliability of this method a longer observation period with possibly more cases is necessary.

_Introduction

Implant is generally a successful treatment modality. However, implant losses can cause real dilemmas from time to time. While a single implant loss does not change the treatment course by itself, more than one loss can make, for instance a fixed restoration, which was promised in the beginning, impossible.

_Case

After planning for a 60-year old female patient, following the extraction of all maxillary and mandibular teeth, except #43 and #44 (Fig. 1), lower and upper immediate dentures have been delivered. Following a 3-month healing period, 6 implants (AstraTech®, Mölndal/Sweden) have been placed in the upper jaw. 6 weeks later, 6 implants (AstraTech®, Mölndal-Sweden) have been placed in the lower jaw as well (Fig. 2). 3 months later (approximately 5 months of osseointegration time for the maxillary implants) the patient was called for the impression taking session for the prosthetic restorations. The implant in the region #26 was moving, and since it was not osseointegrated the implant was removed. Hereupon, the treatment of the patient has been completed with a fixed prosthesis on 5 implants. Individually preparable Ti-design® abutments were selected for the maxilla, and Direct Abutments® (AstraTech®, Mölndal/Sweden) for the mandibula. Initially, the bridges have been cemented temporarily and following a 1 month period without complaints, they have been cemented with polycarboxylate cement (Adhesor® Carbofine-SpofaDental—a Kerr Company/Czech Republic). Approximately 3 months later, when the patient came back with decementation problem of the maxillary restoration, it was observed that two more implants in the upper jaw were mobile. After these implants were extracted, the situation (Fig. 3) was explained to the patient and the treatment alternatives were revised. The patient was initially promised to have fixed restorations, furthermore rejected a new operation and did not want to accept any other alternative except the fixed restoration. The patient strictly wanted the visible part of the prosthesis to be fixed. So the overdenture with a bar, which was our suggestion, was rejected. Since the patient insisted on her demands and wanted to take the whole responsibility, a fixed detachable part between 13–24 (Fig. 4, 5) and a cast metal framework denture for the posterior (Fig. 6) was planned. An occlusal screwed structure for the anterior part was planned in order to prevent often decementation



Fig. 10

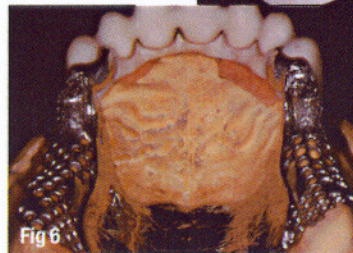


Fig. 6

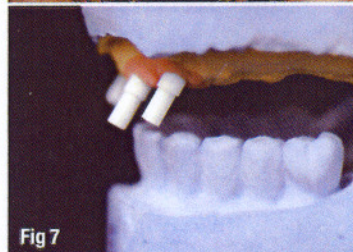


Fig. 7



Fig. 8



Fig. 9

due to dislodging forces during denture removal. However, considering the axial inclination of the remaining upper jaw implants (Fig. 7) making the occlusal screw holes visible on the front-teeth vestibular surfaces, it was determined to manufacture a separate structure that holds the precision attachments (Fig. 8, 9). A secondary structure would cover the primary one including the holes, thus solving the esthetic problem (Fig. 10).

Considering that shrinkage would occur during casting as a result of the big volume of the primary structure which would transmit stress to the 3 implants; a passive-fitting body, prepared with a CAD/CAM system was preferred and ZrO₂ was chosen (ZIRKON ZAHN—Dentarius, Dental Innovation, Parma/Italy).

After taking the impressions and having performed a vertical dimension determination, a tooth setup and try in was carried out in the next session, so both the agreement of the patient in terms of aesthetics and data that would be of value to the laboratory were collected. Then, the analogue of the tooth set up was prepared with a pattern resin (Palavit G®—Heraeus Kulzer GmbH, Hanau/Germany) and the teeth of pattern resin were prepared (Fig. 11a, b, c) and the precision attachments (Ancora®, BEGO, Bremen/Germany) were attached to the most distal parts of the infrastructure. Later the ZrO₂ infrastructure was prepared copying the pattern resin model and the su-

Fig. 6_ Cast metal framework denture for the posterior part.

Fig. 7_ The axial inclination of the remaining upper jaw implants.

Fig. 8_ A separate structure which is carried on occlusal screw retained abutments.

Fig. 9_ A separate structure that holds the precision attachments.

Fig. 10_ A secondary structure covering the primary one including the holes, thus solving the esthetic problem.



Fig 11a



Fig 11b

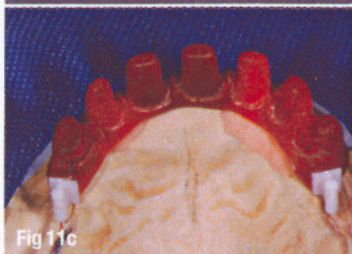


Fig 11c



Fig 12

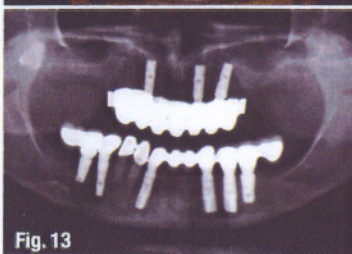


Fig 13

Fig. 11a_ The tooth set up.
Fig. 11b_ The analogue of the tooth set up was prepared with a pattern resin.
Fig. 11c_ The teeth of pattern resin were prepared.
Fig. 12_ The patient also liked the esthetics as well as the comfort.
Fig. 13_ In the radiographic examination 12 months later no important bone loss was observed.

perstructure was also finished using ZrO_2 . The cast framework denture with precision attachments was fabricated in the meantime, too. With the porcelain processing on the Zircon superstructure, the restoration took its final shape, and the patient also liked the esthetics as well as the comfort (Fig. 12). Uni Abutment® screws were tightened, whereas the bridge was temporarily cemented (Temp Bond®—Kerr®). The patient was satisfied with the end result, and no problem occurred in the next 16 months. In the radiographic examination 16 months later no important bone loss was observed (Fig. 13).

Discussion and Conclusions

The loss rate in implants is generally low, but it has been reported that the number of losses were concentrated in some patients.¹ A similar situation can be seen at the Department of Removable Dentures of the Istanbul University, Faculty of Dentistry. 16 losses out of 19 of 412 implants of a follow-up group have occurred in the maxilla. 15 implant losses out of these 16 were in 5 female patients (three failures in each patient). Common about these patients apart from their gender is that their dental history shows tooth loss due to periodontal problems. In all 5 patients type 4 bone according to Lekholm and Zarb² was observed during the implant surgery. Can perhaps this kind of implant loss be related to cytokine secretion rate and periodontitis history? Some display more inflammatory cytokine formation, therefore they are more prone to periimplant inflammation. The presence of IL-1 Beta and os-

teocalcin out of these cytokines could point out to the fact that a faster bone resorption should be expected. In a study, it is reported that a weaker osseoadaptation should be expected with the stimulation of Interleukin-1 beta (IL-1 beta, also called OAF—osteoclast activating factor) and TNF alpha (tumor necrosis factor alpha). OAF has a significant physiological and homeostatic role in the maintenance and repair of bone tissue, however it is not well known to which extent it is physiologic and when it is pathologic.³ The cytokines generally trigger osteoclast formation and activation.⁴ If the patient has a severe chronic periodontitis history,⁵ the possibility that the causative factors may negatively influence the success of implants is high.⁶ In this case, Zirconium was preferred for the manufacturing of the superstructure. It has been reported as the result of several studies that Zirconium shows a great strength even in long structures^{7,8} and that the fracture strength is comparable to metals^{9, 10, 11, 12, 13, 14} It is well known that the shrinkage of CAD/CAM manufactured structures, thus the possibility that they cause contraction on the abutments is lower than after casting procedures.^{15, 16} It is also known that distal extensions can transfer certain stresses to the implants.^{17, 18, 19} However, if the distal extension is the width of a premolar, the forces are expected to be tolerable. In this article, a treatment alternative that can be used for patients with numerous implant losses has been introduced. To be able to draw conclusions whether the

method is reliable or not a long observation period with more cases is necessary.

For literature, please contact the author.

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