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CASE REPORT »

IMMEDIATE LOADING ALTERNATIVE
AFTER FAILED DENTAL IMPLANT

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Case Report

Immediate Loading Alternative After Failed Dental Implant:

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Abstract

Though failure rates of endosseous dental implants are relatively low, the increasing number of implant surgeries being performed worldwide is leading to a greater number of implant failures. This is creating a challenge for both the implantologist and the patient. Patients, who have been treated successfully with implants in the past, will likely select implants again in lieu of prostheses in the event of an implant failure. However, most patients do not understand, nor do they want to experience, the long waiting period necessary for returning to normal masticatory function after initiating the re-implantation process.

This waiting period can be eliminated with the application of basal implants (e.g. BOI®). The case presented here demonstrates the possibility of returning the patient to normal masticatory activity in a short period of time after failed screw implants.

Keywords:

immediate loading; dental implant failure; basal implants; blade implants

Survival rates for conventional dental implant systems are relatively high in normal healthy bone.¹ However, since osseointegration represents a dynamic process both during its establishment and its maintenance, even implants which initially integrate well, may occasionally show unexpected mobility when the bone/implant/restoration system has been in actual function and the forces imposed by the mastication increases or some of the abutments involved in carrying a bridge yield.

A large number of dental implants have been performed worldwide. In the USA alone, it has been estimated that more than 300,000 dental implants are performed annually.^(3,4) According to a recent report, those actually implanted in the USA in 2000 numbered 910,000 (Annual Industry Report, 2000). Therefore, despite a relatively low failure rate in today's dental implant environment, the absolute number of failures is high and presents a clinical challenge to the dental implantologist. Because of the growing demand for dental implants, their failure is becoming one of the most challenging dental complications of our times.⁽⁵⁻⁸⁾ The major problem in implant dentistry in the future will become late-stage failure and loosening.⁽⁶⁾ In recent years the use of screw and cylinder implants has become very popular. Whenever the bone supply is reduced, bone augmentations are recommended today. The results of augmentation procedures are not as predictable as the implant procedure.⁽²⁾ For some practitioners the use of blade implants are a good alternative to augmentations combined with screw implants, because

they help avoiding augmentations.

The likelihood for re-integration of a mobile crestal implant (i.e. screw, cylinder, blade) is small if the interface between the implant and the bone is bacterially contaminated (due to vertical or horizontal mobility) and the perfusion in the interface area is increased. In some patients, general and local contraindications may restrict the possibilities for re-implantation.⁽⁹⁾ Methods to overcome this challenge therefore needs to be proposed and evaluated. We report on an alternative implant method that is ideal for the treatment of patients who present with a failed blade implant(s) and the desire to continue relatively normal uninterrupted mastication.

Case Report

This is a report of a 54 year-old female who was treated 25 years ago after the loss of the molars in the lower left mandible. The patient had received a crown block with four chewing units through a two-stage procedure. About 14 years later the upper jaw had been treated with 4 cylindrical implants, and two of them survived for 9 years in full function ^{Fig. 1}.

The patient presented to our dental clinic, with increased loosening of the bridge in the lower left mandible. The anterior tooth-support had yielded: the second premolar was fractured and the first premolar by itself was not suitable to carry the masticatory load of this whole quadrant. The bridge incl. the implant was mobile in the vestibular-lateral direction. The patient did not report any pain but was bothered by restrict-

ed chewing ability on the right side. The following treatment alternatives were discussed with the patient:

a) removal of the bridge in quadrant III and removal of the blade implants with a subsequent two-stage approach with screw implants after bone augmentation. After a regeneration period of 3 months after the removal of the implant, the patient could undergo bone augmentation, followed by a new implant treatment; or

b) removal of the bridge in quadrant III and removal of the blade implant followed by immediate insertion of 3 basal implants (BOI®)⁽¹⁰⁻¹³⁾ taking advantage of the intact cortical bone available. The patient chose the second option as it would allow him immediate return to normal masticatory activity. Inserting another blade implant into the existing implant cavity did not seem possible, taking into account the total bone height left.

After extraction of the implant and the two premolars under local anesthesia, three basal implants were inserted laterally using multi-cortical support by taking advantage of the existing cortical bone available. In region 34, a three-segment, one-piece, basal implant was inserted directly into the extraction alveole. Region 35 was equipped with a single base-plate basal implant. In region 37, directly to the extraction alveole, an asymmetrical basal implant was inserted.

The impression was taken directly after the implant installation. The sutures were removed at the next appointment, at which time metal casting was examined, and the final metal/ceramic bridge was incorporated on the 4th post-operative day. Figures 1 and 2 show enlarged sections of the treatment process from the panoramic

overview shots.

The vertical insertion slots as well as the extraction slot left after the removal of the blade implant was covered with autologous fibrin membranes.¹⁵

Clinically, the patient showed visible swelling of the left cheek for 3 days and she took pain medications for three days. The patient was asked to refrain from the consumption of hard food for 2 months; however, she began using the new bridge immediately for all other masticatory function and reported similar use and oral function compared to her bridge in the contralateral jaw. Although we recommended the refrain from smoking, she continuously smoked several cigarettes throughout the treatment phase. This affected the soft tissue healing, leading to delayed healing.

Discussion

Failed implants pose a significant challenge to both the implantologist and the patient, especially when using conventional dental implant systems (i.e., screw implants). From the patient's perspective, who has grown accustomed to normal mastication with the existing implant system before experiencing symptoms, the thought of "starting over" and having to wait a significant amount of time before returning to normal function is daunting. However, the implantologist must be prudent in his/her surgical treatment and rehabilitation so as to avoid another failed implant. It could be argued that one should be particularly careful during the initial operation

so as to avoid this scenario. However, failed implants are inevitable despite the use of a quality implant and a skilled implantologist. Though failure rates have declined over the past several decades, more implant operations are being performed. The absolute number of failures, therefore, is on the rise.

In the patient case that has been presented, the patient decided to have basal implants inserted because she could avoid the 6 months of treatment and rehabilitation necessary for return to normal mastication if screw implants were re-inserted. With the option of basal implants that are inserted from the lateral aspect of the jaw bone, using the resorption-resistant cortical bone, we were able to provide the patient a viable alternative which allowed for a single surgical procedure followed by immediate masticatory function. Prosthetic constructions which combine teeth and basal implants also have proven to be favorable options for future success.¹⁴

The replacement of failed screw implants with basal implants, regardless of the etiology (e.g., infection, functional loosening, etc.), constitutes an important indication for BOI[®] implantology.⁽¹⁰⁻¹³⁾ The remaining bone quality and quantity available is also not an issue – in fact, that is a strength of the BOI[®] procedure. When conventional dental implant systems fail, there is typically little bone for immediate re-implantation. For BOI[®] implants, almost any amount of bone remaining is sufficient for corrective procedures in most cases. This, coupled with the patient benefit of immediate functional use, makes BOI[®] an

excellent alternative for treating a patient with failed dental implants.

Conclusion

Basal osseointegrated implants are an excellent alternative for the implantologist faced with a patient who has experienced an implant failure(s). They provide a new implant(s) and allow the patient to return to normal masticatory function with little-to-no delay.

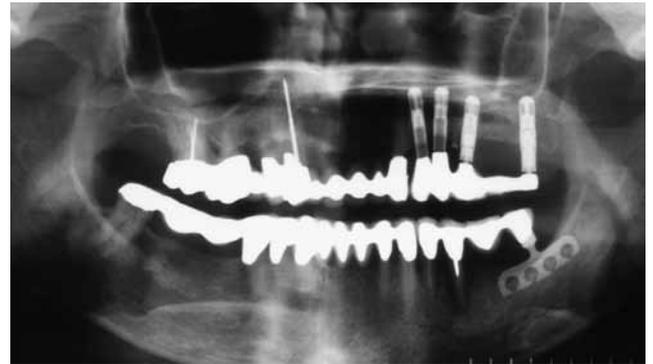


Figure 1. The radiolucent areas around the enossal implant 37 and the tooth 35 are shown in the preoperative overview photo.

Legends



Fig. 2. The blade implant was mobilized through a small vertical slot



Fig. 3. The implant was quite resistant to extracting forces and had to be removed with the help of a crown click instrument



Fig. 4 .After a right-to-left vertical cut, the horizontal cut for the basal implant created the horizontal osteotomy



Fig. 5. The 9/12 single piece BOl®-implant during the insertion



Fig. 6. The fully inserted BOl-implant fits the available bone exactly. Note that the extraction slot was not touched by the vertical implant part. The baseplate however projected through the basal slot areas into the medial cortical wall of the mandible.



Fig. 7 A tripple-BOl®-Implant before insertion in the area if the first premolar.



Fig. 8 . Lateral view of the implants in the areas of the premolars, immediately after insertion.



Fig. 9 Placement of a fibrin membrane over the vertical implant parts. The membrane covers the vertical slot and the extraction slot where the blade implant was extracted before.



Figure 10. The newly placed and previously incorporated implants are shown four days post-operative. The extraction alveoles in the area of the teeth and the relation to the placed implants are clearly visible.

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