

# Immediate Replacement of Damaged or Failing Screw Implants by Lateral Basal Implants<sup>(3)</sup>

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## Abstract

Replacing damaged dental implants by basal implants is a simple and reliable procedure. The conventional approach for such a procedure is to cut out the damaged implant including a significant amount of the surrounding bone with the help of a explanation device. The approach described here includes a vertical cut from the lateral aspect of the jaw bone towards the implant. Through this access-slot the implant is then sectioned vertically inside the bone. All titanium particles are flushed out and the implant is loosened by careful tapping. Then the implant is taken out. The vertical slot is then used for preparing one or several horizontal slots and for the later insertion of the lateral basal implant. This article describes and illustrates the process of the implant's replacement.

**Keywords:** Failure of dental implants, basal implants, TOI/BOI.

## Introduction

As the number of dental implants placed is constantly increasing, failures are increasing also. Failures may be divided into three categories:

- Some implants fail early in osseointegrating; they have to be removed or simply drop out.
- Some of the integrated implants fail (fracture) for mechanical reasons while they are in use.
- Sometimes implants may fracture while they are inserted, and this is then due to an overly strong insertion torque, in relationship to the thickness of the body of the implant. A typical example for this event is the fracture of single piece screw implants with bendable neck, without pre-compression of the bone cavity,
- Some implants undergo the undesired process of so called «peri-implantitis», during which crestal bone is lost while the implant remains stable due to strong osseointegration in the apical part of the implant. In such a case the implant may not fracture, but it will be nevertheless necessary to take it out, as soon as the situation becomes unbearable for the patient.

Whenever implants fracture, at least a considerable part of the endosseous surface must be well osseointegrated, because mechanical resistance combined with masticatory overloading are necessary to allow a fracture.

Implant fractures have different reasons. While in single implants local overload or loosening of abutment of screws are the dominating reasons for a fracture of the affected implant, in segments or circular bridges failure of cementation or loosening of screws dominate. In the later case, those implants tend to fracture, which are still well connected to the bridge. When it comes to avoid decementations, the implantologist faces a difficult decision: if he utilizes strong permanent cement (e.g. FUJI Plus) for bonding bridges to implants, he may have to destroy the work-piece, if a complication occurs and the bridge has to be removed after years. This creates additional costs and the question arises, who will have to cover them. If prosthetic work-pieces are fixed with a provisional cement, the danger of unwanted de-cementations is of course significantly higher. This may then give cause to fractures of implants or abutments which are still connected to the bridge, as loosened crowns create cantilevers. Basal implants rarely fracture during the phase of the initial integration, because the bone around the base-plates undergoes remodeling and thereby does not provide resistance for a fracture<sup>(2)</sup>. If overload occurs during this phase, the implant will rather not integrate, because cracks in the surrounding bone accumulate and prevent proper re-mineralization of the bone.

Lateral basal implants are safe and effective devices and they have been used for numerous years to treat partially or fully edentulous jaws. Other than crestal implants and teeth

these implants utilize the outer corticals of the jaw bone, i.e. the oral aspect of the cortical as well as the vestibular. Bi-cortical anchorage is mandatory. For this reason basal implants are suitable for immediate placement into fresh extraction-sockets and for single base-plate implants the demand for vertical bone is minimal. Single-, double-, and triple base-plate implants have been introduced.

It has been known for decades, that lateral base plate implants may be used in fresh extraction areas. The fact that also the replacement of failed crestal implants is one of the domains of lateral basal implants has to our knowledge never been published in detail.

#### **Materials and method**

The technique which will allow the fast replacement of screw implants is illustrated in the Figs. 1 – 7.

The procedure can be carried out in local anesthesia. In order to have access to the implant site, a wide, lateral full thickness flap is created, using the well know techniques of oral surgery. When preparing the vertical slot, the surgeon will have to consider the position of the new implant and its way of insertion. Only after taking away the amount of bone for the new implant placement the surgeon will consider taking away more bone for the removal of the old or defective implants. This way the bone loss caused by the explantation is minimal.

In many cases the failing implant may be dislocated towards the slot and can be taken

out easily. If this is not possible, the implant must be sectioned. We use a hard-metal cutter for this purpose. The metal particles can be flushed out or wiped out by a gauze cloth. If small particles of titanium or titanium alloy remain inside the bone, they tend to integrate just as implants.

After the failing implant was taken out completely, the horizontal slot(s) for the new implant are prepared. The new implant is chosen with respect to the available bone with and the demand for bi-cortical engagement.

If vertical bone was lost, the new implant will be chosen shorter than the failed implant and this often requires the fabrication of a new bridge. In most other cases the old bridge may be used. The fitting of the bridge should be controlled before the final flap closure is performed. For closing the flap the typical technique for basal implants is used<sup>(4)</sup>.

### Discussion

Patients which have been treated successfully with dental implants, will usually decide again for implants (and not for dentures), even if one or several implants fail. However the second «healing time» is not appreciated and of course the necessity to incorporate (and pay) new bridges is disappointing.

The leading principle of the procedure shown here is, that the vertical osteotomy is carried through while aiming in the first place at the placement of the new implant and not so much while aiming at the removal of the old implant. Hence the preparation of the full thickness flap and the vertical slot must

consider primarily the final position of the basal implant and the pathway of the implant into its position. If this principle is followed, minimal amounts of bone have to be sacrificed.

Even if the procedure described here may save the case quickly and effectively, the possible causes for the complication must be treated as well: unilateral patterns of chewing should be approached by creating the possibility for equally successful chewing on both sides of the arch. A symmetrical AFMP-angle during lateral movements of the mandible under contact is the benchmark for this effort. If rigidly supported chewing surfaces are not equally distributed in both jaws, more implants are often necessary to support the additional teeth. Our treatment aim is a fixed dentition from 6 – 6 in both jaws. Note, that it can also create problems to long term occlusal and masticatory stability, if on one side of the jaw too many chewing surfaces are present.

In many cases the abutment on the new implant will not fit exactly into the old crown. Other than on vulnerable teeth, this slight disadvantage can be accepted today, because strong and reliable cements with good adhesion to metals (such as e.g. FUJI Plus) allow a safe cementation while filling the inevitable gaps between the crown and the abutment.

If the fracture of the crestal implant is associated with vertical bone loss (e.g. due to a peri-implant bone retraction and the development of an unfavorable anchorage-to-prosthetics relationship), crestal implants

are anyway the not the first choice, when it comes to replace the failed implant. In these cases treatment with crestal implants are often accompanied of preceded by bone augmentations or bone transplants. Both procedures increase the overall risks, necessary time and costs.

It is sometimes mentioned, that basal implants create large defects in bone and that they are difficult to remove. After working with basal implants for more than a decade, we cannot confirm this rumor. We have seen many cases when huge amounts vertical bone was lost around crestal dental implants: after this event either a bone transplant became necessary or the reconstruction absolutely required the installation of lateral basal implants (BOI ,TOI). In fact, even in the worst case which we have seen,

a reconstruction with basal implants was always possible in one single step and in an immediate load procedure, whereas conventional techniques would have required invasive, expensive and demanding reconstructions. From our experience the work with (lateral) basal implants is today the only realistic chance to help patients in a reliable and affordable manner. The overall success-rates of basal implant are much better compared to procedures using bone-buildups in combination with two-stage conventional implants.

## Figures



Fig. 1: Mechanical failures are one of the reasons why well integrated dental implants have to be replaced.



Fig. 2: When a vestibular approach is chosen, the bone in the red area will be cut out in the direction towards the implant.



Fig. 3: With the help of a hard metal cutter a lengthy portion is cut off the damaged implant. This procedure requires good cooling, because the metallic structure of the implant will become hot.

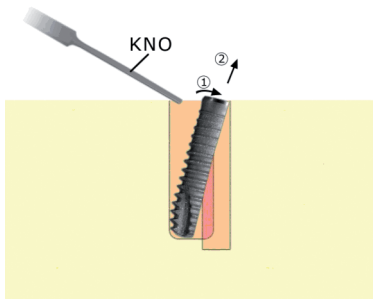


Fig. 4: As soon as enough material has been taken away, the implant is mobilized and discolated into the empty space inside the bone. After this it can be taken out. To loosen the implant a bone chisel or a Bein elevator may be used

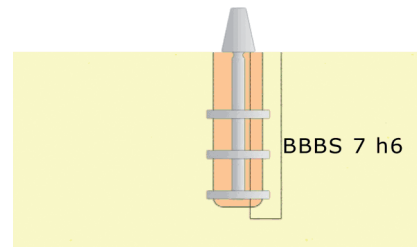


Fig. 6: In the case drawn here, the implant enters the bone through the vertical slot and it is then moved to the left inside the bone. If the available vertical bone is not enough to allow the placement of a triple-base-plate implant, double discs or implant with a single wider base-plate (e.g. with 12mmd) are a good option.

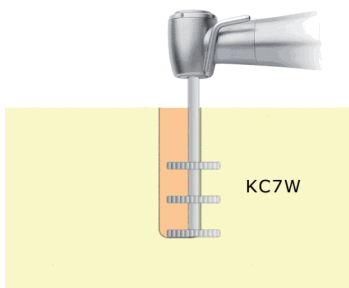


Fig. 5: With the help of a triple-cutter, three parallel horizontal osteotomies are cut into the bone. The new implant may be positioned directly in the extraction socket where the implant was.

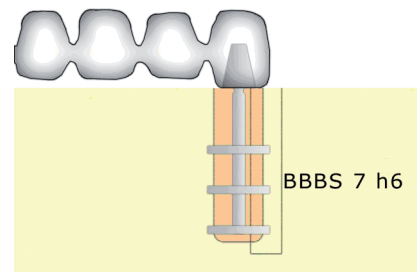


Fig. 7: If the vertical and horizontal position of the abutment was chosen right, the existing prosthetic workpiece is often used at least as a temporary.

## References

1. Ihde S., Ihde A. (Edts.): Immediate Loading, The International Implant Foundation Publishing, Munich, Germany, 2011.

2. Kopp S., Kuzelka J., Goldmann T., Himmlova L., Ihde S.

Model of load transmission and distribution of deformation energy before and after healing of basal dental implants in the human mandible Biomed Tech (Berl).

2011 Feb;56(1):53-8. Epub 2010 Nov 17

3. Evidence and Research Department, The International Implant Foundation: Replacing Replace, Educational Video Series (2007) IF Publishing, Germany

4. Ruzov I., Ihde A. A Flap Closure Technique for Single-piece, lateral basal Implants. CMF Impl. Dir.



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