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IMMEDIATE LOADED IMPLANTS IN EDENTULOUS PATIENTS: CLINICAL AND TECHNICAL ASPECTS USING BIOTEC TRE AND KORUM SP IMPLANTS

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ABSTRACT
Today a lot of patients ask to the clinicians how to achieve implant-supported fixed prosthesis rehabilitation in an ultra short term therapy. The answer comes from analysis of the diagnostic phase that represents the most important role in this kind of therapy, especially in the fully edentulous patients. Starting from the diagnostic wax to plan the final rehabilitation, through the right choice of implants, in this article will be represented the surgical applied principles and the prosthetically-driven implants position. An immediate loading technique in the treatment of edentulous patients with screw-retained provisional restoration, without intrasurgical impression it will be presented, both, for the upper and lower jaws, using internal and external hex Biotec Implants (Povolario di Dueville, Vicenza-Italy).

Keywords: Immediate loading, dental implant, platform switching

Introduction
International literature support the clinical evidence that immediate loaded dental implants with full arch fixed temporary prostheses have a success rate very similar to the one of two stage implants (3, 4).

Different techniques and types of temporary prostheses are available to restore edentulous jaws and support this theory.

Most common protocols include:
1. Prefabricated temporaries and direct relining
2. Readaptation of a pre existing removable prostheses
3. Intra surgical impression and immediate temporary prostheses
4. Direct relining of cemented or screw retained temporary prostheses
5. Screw retained prostheses delivered with the help of computerized system able to plan the implant position by the aid of a surgical guide

Many cases can be approached using a pre existing prostheses (see point 3 and 7) but it is also possible, with much more accuracy, to relined screw retained temporary prostheses made on stereo lithographic plastic reconstruction of the maxillary or mandible jaws, as shown above.

A similar situation can be the one with the prefabricated temporaries modified for the patient chair side or on a gips model obtained from an intra surgical impression and refined in the lab.

In all these cases, despite a large amount of information about immediate temporarization of implants, it is only considered the first step of the rehabilitation of edentulous patients. But a correct treatment plan must include the diagnostic step, the temporary prostheses, and of course, the primary goal, the final rehabilitation. Therefore it can be very practical to analyse the treatment plan “starting from the end”.

Diagnostic plan
Selection of patients and diagnosis are the most important steps for a fixed prosthetic solution entirely supported by implants in edentulous jaws.

In the diagnostic step it is necessary to consider the final rehabilitation, with no interest to the immediate temporary prostheses chosen.

Fig.1. Extra oral tissue and profile evaluation

All the clinical, surgical, prosthetic, occlusal, functional and aesthetic parameters must be carefully evaluated before the treatment. If it’s possible to temporarily maintain some teeth before implants placement, should be done, in order to have best position of the surgical stent and, if fixed teeth supported temporary provisional is maintained, to conditioned soft tissue by relining it in shape of ovate pontics (Figs. 1, 2, 3). If this will not be possible, the lingual and palatal aspects are prepared as in
the removable acrylic prostheses, with a large mucosal support, that is necessary to obtain adequate stability, and precision in repositioning during the following trials (Fig. 4).

A primary wax-up is compulsory to evaluate the above mentioned aspects.

Special attention, in order to collect preliminary information, must be put on gips models, pictures, X-rays, and on a careful evaluation of intra and extra oral soft tissues. This step needs an accurate set-up with acrylic teeth on gips models.

The diagnostic wax-up is used to confirm a stable occlusion, the vertical height, the aesthetic parameters, and the relationship alveolar ridge/teeth (in other words the emerging profile and teeth length).

All these information will help the patient to sign an “informed consent” before beginning of any clinical procedure, focusing his attention on the aesthetic expectation of the final rehabilitation.

**Implant immediate loading**

After intra and extra oral parameters registration, the wax-up is duplicated to make a temporary prostheses and a surgical stent. This protocol allows us to keep the information during all the following treatment phases.

Surgical stents are recommended during the osteotomy, in order to put implants in a predefined position and direction, with the help of parallel pins; implants are inserted along the edentulous arch in accord to the final rehabilitation plan (8), (Fig. 5, 6, 7).

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**Fig. 2.** Set-up with acrylic resin teeth

**Fig. 3.** Taking off the buccal extension of the removable prostheses it is possible to decide the emerging profile of the fixed rehabilitation

**Fig. 4.** In fully edentulous patients we use a large mucosal support

**Fig. 5.** Surgical template made on stereolithographic plastic reconstruction of the maxilla
The reported cases were realized with traditional titanium cylinders BIOTEC (Povolaro di Dueville,Vicenza-Italy), with double etched surface (5) D.A.E.S. (Double Acid Etched Surface), and with the new shaped KORUM SP, that allow a better primary stability, in the most critical sites, and can be restored according to the biological concept of Switching Platform (1, 6, 9), (Fig. 8).

Keeping in position the stent and the implants mounting device, we have the final check of position and parallelism. Then we can screw in the titanium rotational temporary posts. Small pieces of rubber dam are carefully punched, and put around the posts, to avoid direct contact with the surgical wound. The acrylic temporary must sit passively on the buccal and palatal or lingual soft tissue, with a complete mucosal load, and no interference with the titanium posts. The temporary prostheses is now positioned and bonded to the temporary post’s coronal end, using acrylic resin (Fig. 9).

We can now unscrew the posts and send the all lot to the lab for finishing and polish (Fig. 10, 11). The gap between denture and posts can be filled with resin, and all the implants emerging profiles can be shaped. Once posts and temporary are strongly bonded, we can remove the lingual or palatal extension. The screw retained temporary is now ready to be delivered, and the perfect fitting posts-implant platform can be verified with a panorex (Fig. 12, 13).
In other words this technique uses the lingual or palatal side of the temporary as a repositioning instrument and avoids intra surgical impressions or direct relining. Moreover it maintains position and occlusion registered in the diagnostic step.

The final rehabilitation can be realised after 3-4 months of functional load (Fig. 14, 14a). The final impression is realised with a custom made tray and screw retained pick-up transfers (2).

Occlusal plates are realised on both jaws to register inter maxillary relation. Then it’s possible to proceed with different technique to evaluate and transfer the vertical dimension and centrix relation. One of these is to separate the temporary denture between the central incisors. Then the upper and lower occlusal plates are mounted on one side, while on the opposite one we maintain the screw retained temporaries but it is also possible to prepare from the diagnostic wax two completes wax dentures with some plastic pins to positioning over and into the implants so to maintain the two opposite wax dentures very stable. Phonetics, aesthetics and function are now verified and transferred to the lab, in according with patient’s satisfaction (Fig. 15).

This protocol allows the patient to obtain a screw retained fixed prostheses the same day of the surgical procedure.
In a full mouth restoration we check occlusion and all others parameters with two complete wax dentures anchored into the implants with plastic pins. 

The final restoration needs a synergic work of lab technician and clinician.

The metal frame is now tried in and needs to sit passively on implants platforms. A rigid resin plate can used for the abutments try in, in order to avoid the rotational misfit caused by the mechanical friction between abutments and fixture platforms.

The restoration can be delivered in segments, depending on the number of implants, on the type of dentition of the opposite arch and on the dental length.

Full arch restorations assure a much higher biomechanical resistance than separated bridges.

Morphology, colour and surface texture are decided during the ceramic stratification in lab, while the final aesthetic and occlusal adjustments are performed during the first aesthetic try in.

The edentulous upper arch is usually treated with 6-10 implants distributed on the anterior and posterior maxilla.

**Conclusions**

An accurate treatment plan is necessary to determine the possibility to realise a prosthetic project and to keep all information during the different treatment steps.

The temporary prostheses should be delivered the same day of the surgery.

The immediate load approach in edentulous jaws has demonstrated an excellent prognosis in the long term prospective.

The strategic position of the implants and the temporary prostheses, both of which are decided in the initial diagnostic step, determine the final rehabilitation. However, method described for the immediate load approach in restoring edentulous jaws has demonstrated an excellent prognosis in the long term.

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**REFERENCES**