

IMMEDIATE IMPLANT LOADING

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Abstract: Extraction, that is the witness surgical act of the failure of the conservative treatment, may represent a positive act of reconstructive surgery, thanks to the implantation technique with the immediate loading. The therapeutic option of immediate loading compensates the negative psychological effect of extraction. The protocol of immediate loading is submitted to two distinct imperatives. The first is biological and consists of the osseointegration of the implant despite the constraints experienced in the healing stage. The second imperative is logical and consists of the subsequent production of the surgical and prosthetic stage in the shortest time

Cuvinte cheie: punere imediata in sarcina, ocuzie, estetica

Rezumat: Extractia care reprezinta actul chirurgical martor al esecului tratamentului conservator poate constitui gratie tehnicii de implantare cu punere in sarcina imediata un act pozitiv de chirurgie reconstructiva. Optiunea terapeutica de punere in sarcina imediata compenseaza efectul psihologic negativ al extractiei. Protocolul punerii imediate in sarcina a implantelor este supus la doua imperative distincte. Primul este de ordin biologic si consta in obtinerea osteo-integrarii implantului in ciuda constrangerilor suferite in faza de cicatrizare. Al 2-lea imperativ este de ordin logic si consta in gerarea consecutiva a fazei chirurgicale si protetice in cel mai scurt timp.

INTRODUCTION

The definition of immediate implant loading refers primarily to the acceptable time between placing the implants and denture making.

According to some authors, the term ranges from a few hours to five days, while others follow a period of 48-72 hours.

In the present study, the period of time is between 48 - 72 hours.

From the biomechanical point of view, according to some authors, immediate implant loading is accomplished when the crown is made even if this one is put in occlusion. Other authors consider crown occlusion mandatory.

The immediate implant loading must achieve, besides a good primary stability, a proper aesthetic result as well, which most of the times is the most important option of the patient.

From the biological point of view, this approach makes an osseointegration that means getting a direct apposition regarding the bone-implant interface. A late loading produces an area of fibrosis in bone-implant interface (fibro-integration) which does not make good primary implant stability.

In any case, accomplishing an immediate implant loading provides several advantages for both the patients and the practitioner.

For the patient, this technique provides:

- rapid rehabilitation of his functional and aesthetical needs;
- the response to a possible psychological depression, frequently under-evaluated by the practitioner.

For the practitioner:

- it reduces the number of sessions required for the treatment;
- it eliminates the sources of dissatisfaction found in the timing solutions of the classical treatment.

These considerations lead to the practical idea of adopting a technique that takes into account the following:

- the local situation after extraction. The post-extraction site must be cleaned in order not to leave any possible granulation tissue. When the implant does not fill the socket, a drilling of 3-5 mm beyond the apical limit must be performed in order to increase its primary stability that may be influenced by:
 - the size of the implant. The longer the implant, the better primary stability will be obtained. The length of the implant may vary from 10 and 15 mm. Implants shorter than 10 mm presents a high risk for failure. Implants longer than 15 mm are useless.
 - bone quality. A good primary stability is obtained from a dense bone of type I.
 - minimizing the forces exercised at the bone-implant interface. The forces exercised in the implant axis are better tolerated by the bone. In order to reduce the intensity of these forces, it is recommended to join the implants together with a help of a bridge.

In order to optimize the aesthetic result, the concept of "platform switching" should be observed, as well as the accomplishment of a provisional prosthesis capable of guiding the soft tissues.

This consists of connecting an implant of a certain diameter to a pillar of a smaller diameter. This principle offers new perspectives:

- the rules of positioning the implants become more flexible;
- aesthetics management is simplified;
- implants will satisfy the biomechanical criteria of immediate loading without interfering with the aesthetic requirements.

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CLINICAL ASPECTS

MATERIAL AND METHOD

The study was conducted on a total number of 25 patients that were introduced Wital implants. Patients were aged between 43 and 72 years old and had no major pathologies that could contraindicate implant release.

Out of the particular clinical situations, I have chosen to present the case of a patient, aged 43 years who wanted a durable solution to his dental problems with immediate aesthetic solving.

After a detailed anamnesis, diagnosis and radiological investigation, I came to the following conclusions:

- incisor 21 presented II/III mobility with fracture;
- the existing bridge was fixed on teeth 21, 24, 26 and 27.

Figure no. 1. Initial orthopantomography



Figure no. 2. Initial clinical aspect



I chose to extract incisor 21 with the introduction of implants in the positions 22, 23 and 25 and immediate implant loading.

After local anaesthesia - subperiosteal infiltration – the deck was removed. Incisor 21 was extracted with the aid of piezo surgery technique and the socket was augmented with a mixture of autogenous bone and beta-tricalcium phosphate in order to obtain its structural integrity.

I used the piezo-surgery technique in order to achieve a less traumatic extraction as possible and in order to preserve the integrity of the alveolar bone. The piezo-electric surgery principles are identical to those of scaling, the difference being the power required to sectioning the bone tissue which is 5 times superior to the scaler. The different adjustments of the ultrasonic microvibrations' frequency allow proceeding in a variable manner in the presence of different bone densities. Ultrasonic vibration amplitude can be adjusted for micro oscillations with an amplitude of between 20 and 200 μm . Basic frequency is 20000Hz ie 20,000 movements/second. Yet, the piezo-surgical instrument allows the deep penetration along the periodontal space between the tooth root and the alveolar bone. I entered gradually by exploratory movements. I used the chance with intraligamentary action (hence the term of piezo-periotomy) which allowed the expansion of the desmodontal space and a good preservation of the socket. The procedure causes a loss of only 1 to 1.5 mm thickness of the alveolar bone without the risk of vestibular disks' rupture.

The advantages of the piezo-surgery in pre-implanting surgery are the following:

- the incision is selective, exclusively at the level of bones structure, the risk of injury of soft surrounding parts being practically excluded;
- more accuracy because: slippage is avoided; incision is clean.
- a better visibility of the surgical field due to the weak occasionally bleeding;
- more comfort as the practitioner is less stressed by the possibility of an accidental contact with a soft tissue;
- post surgical consequences are less traumatic because of:
 - o reduced bleeding;
 - o reduced edema;
 - o less pain.

Figure no. 3. Tooth 21 after extraction



Figure no. 4. Extraction of tooth 21 with the piezo-surgery device



Figure no. 5. The 3 implants with peak-abutments for dental impression



In the 22,23 and 25 areas, I have three Wital implants inserted after incision and periosteum separation.

The implants had a length of 13 mm with a primary stability above 35 Ncm.

The implants were inserted to an optimum depth in order to avoid periimplantitis. The whole area was sutured with self-dissolving thread.

CLINICAL ASPECTS

Figure no. 6. Final radiography 3 months after implantation before assembling the final work



Immediately after surgery, peak abutments were installed on the implants. I proceeded to the fingerprint of the field prosthetic, impression that was given to the dental laboratory in order to accomplish a provisional prosthesis. Immediately, in the dental setting, a provisional prosthesis has been made with a help of a silicone tray. The second day, the provisional prosthesis made from dentalos in the laboratory (synthetic material reinforced with glass fibre) was installed in laboratory which was to be used for a period of 3 months.

Figure no. 7. Provisional bridge



Figure no.8. After removing the provisional prosthetic work, the good condition of the gum at the level of teeth 22, 23 and 25 can be observed



Figure no. 9. The implants on which the Titanium abutments made in laboratory were assembled



The patient was resolved within 24 hours from the aesthetic, functional and prosthetic point of view. Provisional prosthesis was loaded at the level of teeth 26,27 and 24.

Three months after, the provisional prosthesis was removed. One can note the gum that is in perfect condition which gives a good insurance for getting a suitable aesthetics.

For the final work, titanium abutments were accomplished in the laboratory to fix the final prosthetic work on.

Figure no. 10. The patient with his final prosthetic work



RESULTS AND DISCUSSIONS

As in the 25 studied cases, the case presented showed that the loading implants were well osseointegrated.

The clinical investigations made at regular periods of time showed:

- 3 months after the provisional prosthesis, gingival recession was mild in the stable papillae;
- radiological follow up 6 months after the final prosthesis showed no damage and a good osseointegration of the implant.

The good results were due to:

- quality of the implant;
- favourable bone offer;
- obtainment of a good stability of the implant;
- good occlusal balance of the prosthesis.

CONCLUSIONS

The results obtained according to those of the specialized literature, reinforce the belief that the immediate implant loading is a good, reliable method that solves in very good conditions, both the functional and aesthetic needs of an immediate postextractional implant.

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