

RETROSPECTIVE STUDY REGARDING IMMEDIATE IMPLANT LOADING

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Abstract: The huge success of osseointegration, the predictability of implant treatment modalities and the progress of implant insertion procedures have helped to reduce the time elapsed between extraction and prosthetics. Timing of oral rehabilitation makes biological impact and physiologically integration to be improved. This study proposes a comparison of achievements in immediate loading towards late loading of implants inserted immediately after extraction. **Materials and Methods:** 150 implants were retrospective inserted and prosthetic loaded in Dental Clinic from Emergency Military Hospital Sibiu. Implants' type was S-Line-Implantium (Dentium-Korea). 80 out of 150 implants were loaded immediately after extraction and 70 were late loaded. The study was done over a period of 5 years. **Results:** According to Misch's criteria, success rates between immediate loading (96.4%) and late loading (96.8%) are not too different. **Conclusions:** This retrospective study showed that postextractional procedure with immediate loaded implants does not prevent successful implantation, on short and medium term. Additional studies are needed to validate these results.

INTRODUCTION

According to Branemark's principles of osseointegration, a period of at least 4 months for the mandible and 6 months for the maxilla should be considered before planning a restoration. Conventional load is a predictable and accepted treatment modality that was used as a reference mark for comparison with other protocols. However, medical teams have made efforts to implement procedures that shorten the treatment time. The procedures can be optimized in postextractional implantation with immediate loading; provisional prosthesis stage (fixed or mobile) it is no longer necessary, aesthetics being improved. Functional and physiological integration of the restorations is facilitated by reducing healing time and psychosocial integration.

In the 90s, based on previously accumulated knowledge, advantages and favourable prognosis of immediately loaded implants was demonstrated.(1)

The advantages of immediate implant insertion include reducing the number of surgical procedures, shorter time interval and fixed temporary prosthesis with preservation of bone height and / or width of the vestibular bone.(2)

The main condition for immediate loading is primary stability which aims to limit excessive micromovement phenomenon that can replace osseointegration with a fibrous healing. Ensuring primary stability, the key determinant of osseointegration success, depends on many factors especially on periimplantar bone density and volume.(3) Design and new implant surfaces help practitioners to adopt new therapeutic approaches with a faster work graphic guided by aesthetics. Protocol for implant insertion and for provisional restoration is mainly applied in anterior aesthetic area in order to maintain and strengthen gingival architecture.(4)

The need of a faster treatment and improved aesthetic results through bone and soft tissue preservation and it contributed to the evolution of modern implant therapy. This includes numerous therapeutic protocols that do not follow

traditional guides, including adding a roughened titanium surface, implant insertion and immediate provisional restoration, which improve aesthetic results by reducing the number of surgical interventions and providing gingival tissues support. (5) Implants inserted immediately after extraction and loaded with a temporary restoration in occlusion represent a simple, predictable and minimally invasive procedure and survival rates of implants is similar or equal to those which were charged late. (98-100%)

This prosthetic method can be compared to conventional prosthetic options in partial edentation: fixed partial prosthesis, fixed adhesive resin restoration, fixed restoration with crown preparation for adjacent teeth. (6)

Qualitative and quantitative factors that guide the treatment plan of immediately loaded implants are appropriate bone quality and quantity, application of an atraumatic extraction technique (ex. piezosurgical techniques). Implant placement is coordinated by the prosthetic construction, parafunctions avoidance and primary stability insurance. Caution should be exercised in patients with recent specific and systemic affections (within two years), chronic smokers or drinkers and those with uncontrolled systemic diseases (ex. Diabetes).

Immediate loading of postextractional implants presents some disadvantages due to extreme anatomical and clinical variability which requires that this type of procedure to be applied by a team of experienced implantologists.

An analysis of studies relating to observation period of postextractional implants' integration was maximum 5 years. This short period does not allow validity as a result criterion, taken into account that these are lack of complications and implant durability.(7)

Misch's evaluation criteria apply a methodology by which success is determined not just by implant's survival rate but also by the survival and development of the periimplantar tissues.

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PURPOSE

This retrospective study is designed to use these criteria proposing the assessing of postextractional integrity of bone tissue and soft tissue in immediate or delayed loaded implants.

MATERIALS AND METHODS

The study was prepared together with the resident doctors of Dental Medicine Cabinet from Military Emergency Hospital Sibiu and the selected patients were rehabilitated with postextractional implants for a period of 5 years (2008-2013) and were consulted and evaluated in 2014 and comments collected were retrospective and anonymous analyzed (figures no. 1,2,3,4,5)

Based on these criteria, 80 patients with Implantium implants (Dentium, Korea) were examined by clinical and laboratory evaluations. The evaluation criteria were made after Misch's scale: bleeding tests, depth of the periimplantar bag, bone level compared to implant shoulder or plaque index. In the first group were included 82 patients with immediately loaded implants and 32 subjects with delayed loaded implants at 4 months after their osseointegration, and 14 patients were carriers of implants applied by both procedures being included in both study groups.

Figure no. 1. Insertion of implants immediately after extraction



Figure no. 2. Installation of healing and suture the wound



Figure no. 3. Clinical aspect 4 days after insertion of implants



Figure no. 4. Fitting the prosthetic abutments and their sealing



Figure no. 5 Prosthetic cementation 5 days after the insertion of implants



Patients' evaluation criteria included passport information about the patient, age and gender, general health status indicating chronic diseases, where smoking and how smoking, oral maintenance status by measuring plaque index according to Mombelli's criteria, presence of plaque around implants and remaining teeth; existence of pain, inflammatory phenomena or infectious processes around implants; evaluation of radiologic imaging before and after postextractional intervention; setting implantation date and type of prosthetic load (unidentar, bridge or overdenture); palpation of the periimplantar sulcus with periodontal probe on all surfaces but with more attention on the buccal side to highlight the aesthetic impact; comparative evaluation of radiographs from the archive and of bleeding index on palpation with the probe when applying Mombelli's tests: 0- no bleeding; 1- local bleeding; 2- linear marginal bleeding; 3- heavy bleeding occupying all the space between teeth.

RESULTS AND DISCUSSIONS

The average age of the subjects with delayed implantation was 51.2 years for Group I, and 56 years (± 10) for Group II.

Smokers were predominant in both groups of the study and general health status was predominantly good (78%) equal for both categories. The length of implants that were inserted was predominantly 10 mm and 12 mm (72% for Group I and 86% for Group II). The plaque index was mainly between 0-1 (Mombelli scale) for 82% and between 2 - 3 for 18%; almost equally distributed in the two study groups. The distribution of implants in the two groups, according to the qualitative assessment scale of Class I Misch, prevailed unidentar and pluridentar implants distributed almost equally pluridentare and for delayed loaded implants group, the majority (81%) accounted for pluridentar prosthetic support, bridges or overdenture.

The success rate was 97.9% for immediately loaded

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implants and 98.2% for delayed loading. Two maxillary implants were lost, one charged after two and a half years and one 6 months after insertion - replaced after grafting implant site. The three immediately loaded implants which were lost within 1- 4 months, were successfully replaced but because of the grafted bone the prosthetic loading was delayed. Only one implant was in Misch's group category III of poor qualitative integration.

At evaluation time, for delayed loaded implants elapsed time was on average 24.5 months (6 months - 5 years) and 26 implants with survival rate over 3 years had a 100% success. Immediate loading after extraction is a recent procedure, the period after implantation was less than 17.5 months and 17 implants loaded over 3 years had a success rate of 100%, all being inserted in bone with Misch I quality. Provisional loading was made the same day or later between 7-10 days after insertion and final prosthesis after 4 months in the mandible and 6 months in the maxilla.(9)

Delayed loading of the implants was made on average after 4 months from insertion and final prosthesis no later than 6 months or 8 months if the bone was augmented. Periimplantar bag measurements were an average 1.4 mm and were not too distant from one study group to another. The results of the retrospective study demonstrate similar rates of success both in immediate loading after extraction (%) and delayed loading (%) of the implants. These results are 100% consistent with the observations reported by Denis Tarnow and R. Smith in interforaminal inserted implants (6 years) and a rate of 98-100% in postextractional implants placed on the remaining alveolar crest, or CHIAPASCO and GUTTA with 97.6% out of 328 different types of implants.(8)

The data of this study ensures that postextractional immediate loading process is not a problem for the practitioner. Implants were lost in situations with implants traumatized by incorrectly adjusted removable prosthesis or in case of unstable occlusion and / or associated with parafunctions.

This study showed no big clinical difference between delayed or immediate loading but it should be noted that they are valid and applied specifically only to a particular implant system, the product of Dentium company and these criteria must be taken into account.

CONCLUSIONS

Postextractional immediate loading helps to improve life quality, and at present there are available protocols specifically for such a procedure. This retrospective study for the evaluation of implants inserted and loaded onto a 5 year period, showed that the immediate prosthetic technique does not compromise the success on short and medium term and additional prospective studies are required to validate these findings.

REFERENCES

1. Cochran DL, Morton D, Weber HP. Consensus statements and recommended clinical procedures regarding loading protocols for endosseous dental implants. *Int J Oral Maxillofac Implants.* 2004;19:109-13.
2. Chen ST, Wilson TG Jr, Hämmerle CH. Immediate or early placement of implants following tooth extraction: Review of biologic basis, clinical procedures, and outcomes. *Int J Oral Maxillofac Implants.* 2004;19:12-25.
3. Hämmerle CH, Chen ST, Wilson TG Jr. Consensus statements and recommended clinical procedures regarding the placement of implants in extraction sockets. *Int J Oral Maxillofac Implants.* 2004;19:26-8.
4. Romanos GE. Present status of immediate loading of oral

implants. *J Oral Implantol.* 2004;30:189-97.

5. Degidi M, Piatelli A, Felice P, Carinci F. Immediate functional loading of edentulous maxilla: A 5-year retrospective study of 388 titanium implants, *J Periodontol.* 2005;76:1016-24.
6. Chiapasco M, Gatti C. Implant-retained mandibular overdentures with immediate loading: A 3- to 8-year prospective study on 328 implants. *Clin Implant Dent Relat Res.* 2003;5:29-38.
7. Jaffin RA, Kumar A, Berman CL. Immediate loading of dental implants in the completely edentulous maxilla: A clinical report. *Int J Oral Maxillofac Implants.* 2004;19:721-30.
8. Chiapasco M. Early and Immediate restoration and loading of implants in completely edentulous patients. *Int J Oral Maxillofac Implants.* 2004;19:76-91.
9. Misch CE, Degidi M. Five-year prospective study of immediate/early loading of fixed prostheses in completely edentulous jaws with a bone quality-based implant system. *Clin Implant Dent Relat Res.* 2003;5:17-28.