

Case Report

Immediate Loading of single- Implant With A Minimally Invasive Surgery : Case Report

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ABSTRACT

Replacing missing teeth with dental implants is highly predictable treatment and with the requirement of patients to regain their function and aesthetics, allowing propose alternatives as immediate loading. Dental implants subjected to immediate loading, behave almost same as delayed loading implant and have the advantage of reducing the duration of the treatment and have a good prognosis in the long time, whenever considering factors such as a good primary stability, good bone density and absence of micro movements. This case report includes immediate loading and its implementation through a minimally invasive surgery in order to satisfy the requirements of the patient.

Keywords: surgery, immediate loading, dental implant.

INTRODUCTION

Dental implants supporting single crowns represent a well-documented therapy for the restoration of single tooth gaps showing high long-term survival rates. Despite varying rates of technical, biologic, and esthetic complications, this treatment modality can be

considered a safe and predictable therapeutic option.^[1]

Immediate loading implants are increasingly popular and represent an effective technique in implant dentistry.^[2]

The advancement of implant dentistry has allowed to shorten treatment time by the immediate restoration of implants and a high survival rate^[1,3,4]; ranging between 96.4% to 98.2%^[2,3,4], supported by clinical and histological studies, have shown that immediate loading of dental implants is a useful and viable alternative.^[1,9]

An important part of successful treatment is to meet certain requirements, such as: the quantity and quality of bone tissue (type D1 or D2) trying to achieve a three-dimensional position,^[2,4,5,6]; primary stability to prevent the occurrence of micro-movements, even when the implant is subjected to occlusal loading^[1,3,4,7,8] being an acceptable average torque of 32 N / cm^[1,2,4]; and control of micro movements, these are acceptable from 50 to 100µm, this can be reduced to 30 to 50 microns with greater insertion torque of 100 N / cm, but less torque to 10 N / cm, resulting in the loss of implant or only fibrointegration.^[2,4]

The treatment of placement of implants using a

minimally invasive flapless approach has the potential to reduce intra and post-operative bleeding and postoperative discomfort and minimize crestal bone loss. The punch technique when placing implants, shows that survival rate at 3 years was 91%, with an average of 1.0 mm marginal bone resorption during the first year, 0.4 mm after the second year, and 0.1 mm after the third year.^[10]

The aim of this case report is to show the sequence of treatment and outcome of rehabilitation to show that immediate loading is an effective and reliable technique; and thanks to minimally invasive surgery providing the patient a comfortable postoperative sequelae.

CASE REPORT

A 68 years old female patient visited the office with apparently good general health with no history of systemic disease or harmful habits; stating that she wanted to restore missing 45, which was lost about 3 years ago (Figure 1 and 2).

After assessment, both clinical and radiographic, it was determined that there was enough bone and soft tissue to perform minimally invasive surgery for placement of a tapered implant internal hexagon of 3.8 mm wide and 11.5 mm long in the position of the missing 45 with immediate load and thus, satisfy the requirement of the patient.

Antibiotic prophylaxis was performed with 2 grams of amoxicillin and clavulanic acid, 1 hour before surgery. After asepsis and intraoral infiltrative local anesthesia of the mental nerve with a cartridge of 2% lidocaine with epinephrine; minimally invasive flapless surgery, which consisted of a single surgical procedure, was performed. For this purpose a circular cut was made (Figure 3); the

sequence of preparation of the bone for the implant according to the implant system used is then initiated.

The implant was installed with a torque of 40 N /cm submerged trying to respect the bony ridge (Figure 4 and 5). This was followed by impression with closed tray technique (Figures 6 and 7).

Patient was put on celecoxib 200 mg every 12 hours for 3 days and rinses with chlorhexidine gluconate 0.12% every 12 hours for 2 weeks.

After 24 hours metal-ceramic crown was finished and cemented (Figure 8). Follow up was done after 1 year. (Figure 9).

DISCUSSION

The purpose of placing an implant in immediate or early function is making of the prosthesis being able to transfer functional masticatory loads on the day of surgery or masticatory forces applied within two weeks following insertion of implants.^[4]

This objective is achieved in this case described, where restoration based delivery at 24 hours after minimally invasive surgery to install the implant flapless procedure, also not required to place stitches and potentially reduces discomfort and postoperative sensitivity of the patient.

The immediately and conventionally loaded implants are equally successful clinical procedures regarding implant survival and marginal bone loss; inserted with a minimal torque in the range of 20 to 45 N/cm. However, the recession of the buccal mucosa after installing the implant was found significantly inferior to soft tissue loss for immediate loading as compared to conventional loading.^[1]

However, concern has been expressed about the formation of fibrous connective tissue interface in dental implants subjected to immediate loading, mainly in the posterior maxilla.^[8]



Figure 1: Preoperative buccal view



Figure 2: Preoperative occlusal view



Figure 3: Circular incision in the selected area to install the implant.



Figure 4 : Implant
3.8 x 11.5 mm .



Figure 5: Direct impression coping for
closed tray



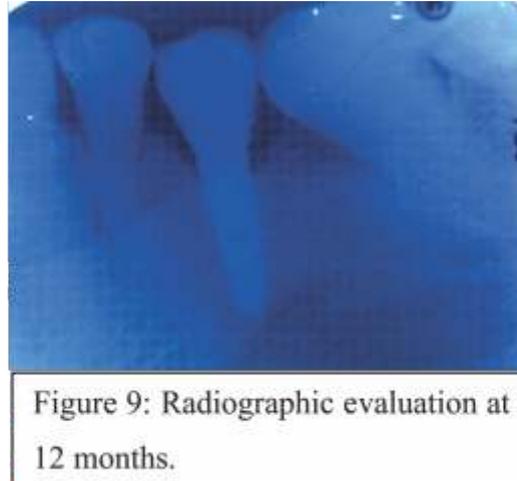
Figure 6: Healing screw.



Figure 7: Finished Crown.



Figure8: Cemented Crown.



But it has been proven that the mechanical load is a potent regulator of bone remodeling, and it has been considered essential for the maintenance of homeostasis of the skeleton and for bone formation.^[7,9]

Mineralized bone development depends on two key factors: the mechanical insertion of the implant must prevent micro movements and must create a static environment for bone repair; and appropriate use of biological principles to prevent the formation of connective tissue and achieve intimate contact between bone - implant.^[7,8] Additionally take into account another factor mentioned by Steigmann M in the consensus 2006, which states that no immediately loaded implants could cause the collapse of the surrounding tissue.^[2]

Also, the minimally invasive flapless surgery offers patients the possibility of high implant predictability with clinically insignificant crestal bone loss for up to 4 years. Proper diagnosis and treatment planning are key factors in achieving predictable outcomes.^[10]

The effectiveness of immediate loading, based on the background described, is evident in the stability gained from installing and controlling a year of life on the implant restoration.

In contrast, this procedure always requires good

preparation by surgeon and meticulous planning both in the selection of the case, and development of prosthetic restoration to achieve the expected results.

CONCLUSION

The immediate loading technique is a treatment that offers great aesthetic and functional advantage, and helps us to meet the increasing demands of patients taking into account in making a good selection and case planning to achieve the objectives.

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