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Case Report

Atraumatic tooth extraction with immediate implant installation: case report

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Abstract

Dental implants have been widely used in dentistry with high success rates. The immediate implantation tech-nique was developed aiming the installation of the dental implant followed by the tooth extraction, which add-ed to atraumatic extraction, improves the healing process. The purpose of this case report is describing the clini-cal sequence of an atraumatic tooth extraction with immediate installation of a single dental implant, and sub-sequent installation of a prosthetic crown. A female patient underwent an atraumatic extraction of tooth 35 and, installation of an immediate implant. After three months, a provisional crown was placed and remained in function for one month and after that, a definitive prosthetic crown was installed. Atraumatic extraction to-gether with immediate implant installation, when selected correctly, become an excellent and safe treatment option, favoring the patient with a single surgery procedure and postoperative session.

Keywords: Dental Implants; Oral Surgery; Bone Graft; Immediate Dental Implants.

Abbreviations

IDI: Immediate Dental Implant; BG: Bone Grafts; ODI: Osseointegrated Dental Implants; AET: Atraumatic Extractions Techniques.

Introduction

At the end of 1970s, a technique called immediate dental implant (IDI) was developed with the objective of installing the dental implant immediately after a dental surgical practice of extraction. Currently, in cases of single tooth loss in the esthetic area, the installation of a dental implant at the same time of tooth extraction, is the technique that has become the first option for improving the stability of the alveolar ridge [1]. One of the concerns after a dental extraction is the bone resorption. The alveolar bone is physiologically reabsorbed when a tooth is extracted, both in width and height, with negative repercussions in a subsequent installation of osseoin-tegrated dental implants (ODI). Bone tissue is unable to regenerate by itself in form and function, making recon-struction by means of bone grafts (BG) necessary to repair these defects in those cases of treatment with dental implants [2]. Atraumatic extractions techniques (AET) were developed to decrease the number of surgical ses-sions, reduce inflammatory processes, preserve the alveolar bone in purpose of the installation of dental implant and mitigate bleeding that can happen during the surgery and in the post-surgical period. The indications for installing the IDI include teeth fractures or root resorption, sub gingival cavities and unsatisfactory endodontic treatment, considering a careful evaluation of the bone quality, occlusion pattern, the existence of parafunc-tional habits and the systemic conditions of the patient [3, 4].

AET with IDI installation ensures a better final resolution of the implant-supported prosthesis. This technique is progressively being used in clinical practicing, since it is already consolidated and scientifically based in the liter-ature. The aim of the present study was to describe the clinical sequence of an atraumatic extraction with im-mediate installation of a dental implant and permanent installation of a prosthetic crown.

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Case Report

Female patient, 51 years old, with no report of systemic disease, sought treatment in a private office presenting a fistula in the lower premolars area, on the left side. In the periapical radiographic image, tooth 35 showed an oblique root fracture, fiberglass pin with length up to the middle third of the root, no observation of the remain-ing obturator material, destruction of hard lamina and alveolar crest in preserved mesial and peri-apex (**Figure 1**).

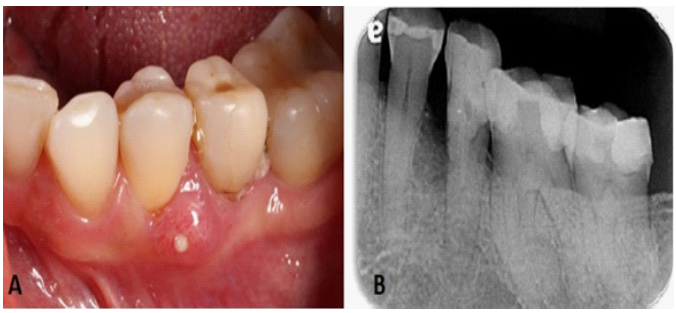

Figure 1: (A) Initial clinical image. (B) Initial periapical radiographic image.

Surgical Procedure

A dose of 500 mg of amoxicillin was prescribed two days before the surgery. The patient was instructed to rinse the mouth with oral chlorhexidine 0.12% three times a day, during one minute, every 8 hours to minimize oral bacterial load for 21 days. Local anesthesia was delivered with 4% articaine with adrenaline 1:100,000 in the mental foramen as well as local infiltration immediate to the tooth. Once anesthesia was achieved, extraction of the tooth 35 followed using an atraumatic technique using periotomes in a flapless approach.

After the tooth extraction, immediate implant installation was performed in the same surgical procedure, filling the gap between alveolar bone and the dental implant with a natural bone substitute (Bio-Oss®, Geistlich, Swit-zerland). Morse taper implant (3.5mm by 11.5mm) (Neodent, Curitiba, Brazil) was used without immediate loading, only a cover screw was installed, and it stood there for three months (**Figure 2**). The same antibiotic used initially, was prescribed again for a week.

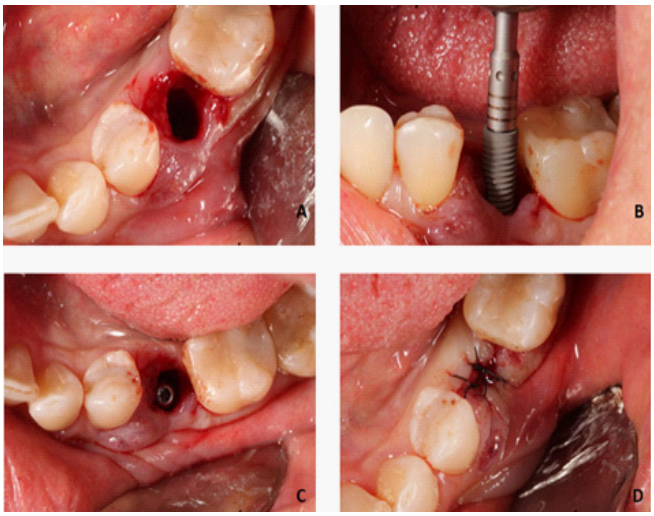

Figure 2: (A) Atraumatic extraction. (B) Installation of the dental implant. (C) Evaluation for placing biomaterial. (D) Suture.

After the healing period, the reopening surgery was performed, with the placement of a temporary crown using a universal abutment. After 30 days, the impression was taken to create a zirconia copping, and then, subsequent application of the ceramic and finally the installation of the permanent crown (**Figure 3**).

Figure 3: (A) Zirconia copping and bite registration. (B) Installation of the permanent crown.

The final restorations were delivered without complications and in compliance with the patient's aesthetic and functional expectations.

Discussion

The placement of a dental implant immediately after a tooth extraction is a procedure that reduces the patient's discomfort and risks, as well the number of interventions to which the patient would is submitted. This technique is a safe option in periodontal or endodontic infected sites, even when immediate implant loading is used [5]. Despite, a treatment plan should be carried out, assessing the patient's systemic conditions, and considering the risks and benefits [6]. The present report describes excellent results in an atraumatic extraction with the installa-tion of an IDI, even in an area with suppuration. It is noteworthy that there is no consensus regarding the im-plant insertion time. Treatment with dental implants promotes better results in healed sockets. However, there is a convergence when it comes to the patients' satisfaction when they are rehabilitated with immediate implants, especially with immediate loading [7]. Dimensional changes in bone and gingival tissues right after a tooth ex-traction, promotes functional and aesthetic alterations [8]. In that regard, not only does the implant installation technique increases the success rate, but also the way the alveolus is treated after the extraction is able to main-tain a degree of conservation and provide better bone support for prosthetic rehabilitation [9]. In this present case, the immediate implant installation and the filling of the alveolar space with biomaterial was performed as the most suitable treatment plan. Atraumatic extraction preserves bone tissue and reduces trauma to the pa-tient, enabling treatment with osseointegrated implants. It is shown as a safer method in situations of fine alveo-lar ridge and with greater chances of fractures [10]. It aims to perform the extraction of the tooth in the vertical direction, preserving alveolar bone and having a minimum of bone expansion, considering that the amount of remaining alveolar bone cortices and healthy bone apically to the socket for anchoring the dental implant are important factors as a condition of an adequate its initial stabilization and an alveolar repair process without major complications [11].

Conclusion

Osseointegrated dental implants have shown good functionality and efficiency in their several treatments and atraumatic extraction along immediate dental implant installation, when selected correctly, becomes an excel-lent and safe treatment option. Thus, as seen in this case, atraumatic extraction in conjunction with the imme-diate installation of the dental implant, presented itself as a successful case of oral rehabilitation. The result was satisfactory to the patient, for getting back health, function and chewing quality.

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