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Immediate Placement of Single Implants with Immediate Provisionalization in the Maxillary Aesthetic Region

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Abstract

Aim: This case report with medium-term follow-up aims to report the successful results of ridge preservation using inorganic bovine bone mineral, simultaneously with the installation of a new implant available on the dental market, together with immediate provisionalization of an upper lateral incisor in the anterior aesthetic region of the maxilla. Case Report: A patient presented failures in the upper anterior teeth, during the procedure the dimension of the alveolar ridge was preserved using bovine bone graft, simultaneously the implant placement with a flap was performed, together with the immediate provisionalization of the implant. The definitive restorations were delivered 4 months after implant placement. Results: At 6-month follow-up after loading, prosthetic and implant success was demonstrated, with a favorable aesthetic result and high patient satisfaction. Conclusions: Immediate provisionalization in conjunction with ridge preservation combined with bone graft, simultaneously with implant placement with a flap with an immediate implant provisioning protocol, as proposed in this article, is something already well documented in the literature, in turn, being a viable approach to minimize reabsorption of the alveolar ridge, as well as optimizing aesthetic results.

Keywords: Aesthetic Zone; Dental Implants; Dental Materials

Introduction

The placement of osseointegrated implants, although common in dentistry, continues to be an object of study in the search for aesthetic and functional excellence. In this context, restoring aesthetics in the anterior region is essential, as compromised dental elements in this area have a significant impact on the appearance of the smile. Tooth extraction followed by immediate provisionalization appears as an excellent therapeutic option, allowing detailed pre-planning of the aesthetic results and the positioning of the implant concerning the ideal prosthesis [1].

This procedure is particularly relevant in the aesthetic region, such as the upper lateral incisors, where preserving the gingival contour and maintaining a natural smile is

crucial. The technique of immediate provisionalization after extraction is widely used to preserve both aesthetics and function after tooth loss [2].

Although fixed partial dentures are described in new guides with proposed overlays, a standardized method for incorporating prefabricated dentures directly onto the implant remains elusive. In this sense, this study aims to describe a case of upper lateral incisor extraction with immediate provisionalization, highlighting the clinical aspects and the results obtained. Prior prosthetic planning facilitated the placement of an implant in the jaw, followed by the immediate installation of a fixed partial denture, using an adaptation system within a completely immediate workflow.

Case Description

Initial Situation

Patient J.M.L.M., male, 45 years old, sought dental care presenting pain and mobility in the upper left lateral incisor (tooth 22) (Figure 1). Clinical and radiographic examination revealed a root fracture and an extensive periapical lesion, making it impossible to maintain the tooth. It was decided to extract the tooth followed by the immediate installation of a temporary one. After local anesthesia, the extraction was performed minimally invasive, preserving the alveolar bone and gingival tissue.

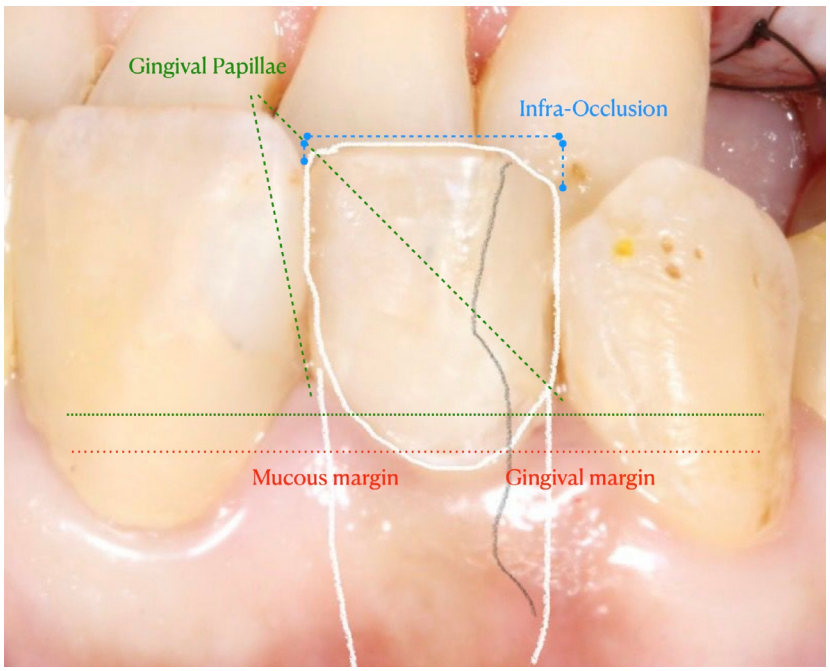

Figure 1: Clinical aspect of tooth 22, with delimitations of structures that are taken as a reference in rehabilitations in the anterior region.

Surgical Situation

An envelope flap was performed from a linear incision between the alveolar crest bones at the interdental level of the alveolar ridge and the remaining dental element (Figure 2). Drilling was performed according to the usual protocol (Systhex®, Curitiba - PR, Brazil). Milling was carried out at 800 rpm, under intense irrigation of 0.9% saline solution (MedFlex®, Eurofarma laboratorios S.A, São Paulo - SP, Brazil), using an electric surgical motor (Driller®, Carapicuíba - SP, Brazil) and following the sequence: spear cutter, 2 mm helical cutter, 3.5 mm conical cutter (Systhex®, Curitiba - PR, Brazil) (Figure 3). The 11.5 mm Avant cylindrical/conical Morse Cone implant (Systhex®, Curitiba - PR, Brazil) was installed with a torque of 40 Ncm (Figure 4). After using the 2.0 mm and 3.5 mm drills, a position indicator was applied to determine the appropriate direction and interocclusal space. Preceded by the placement of the Avant cylindrical/conical morse cone implant with Ø 3.5 × 11.5 mm (Systhex®, Curitiba - PR, Brazil) installed in region 22, with an installation torque equal to or greater than 40 Ncm, two simple monofilament stitches were used – Monocryl 5-0, for repositioning soft tissues. It was possible to observe adequate alignment and positioning of the implant in the immediate postoperative period, favorable to prosthetic reconstruction.

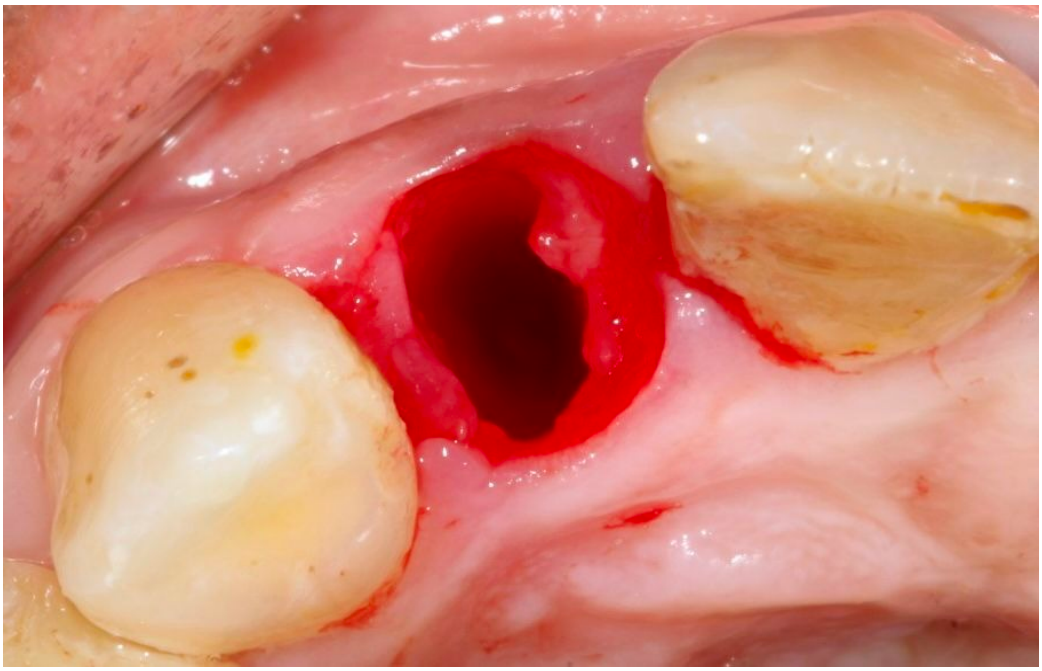

Figure 2: Maintenance of the integrity of periodontal tissues after atraumatic extraction.

Figure 3: Insertion of the Avant implant with a contra-angle wrench at 40 rpm.

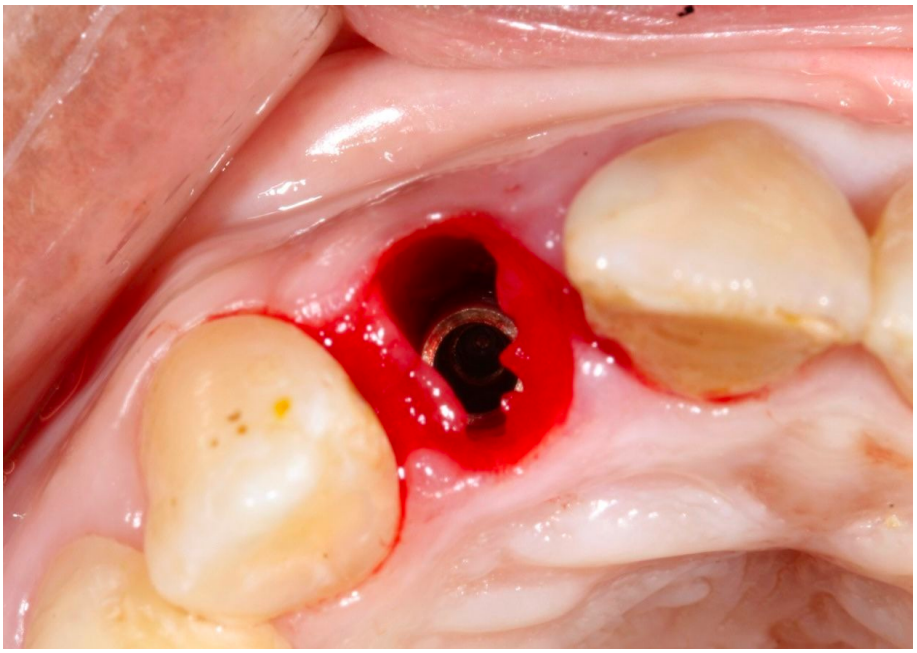

Figure 4: Avant implant installed, following 3D positioning of future prosthodontics.

The heights of the metallic links (Ø 3.3 × 2.5 mm, Ti base, Systhex®, Curitiba - PR, Brazil) were previously selected in the software, using the prosthetic selection kit (Systhex®, Curitiba - PR, Brazil) (Figure 5). After insertion of the dental implant, the space formed between it and the vestibular wall of the socket was filled with synthetic hydroxyapatite bone substitute (BlueBone®, Regener, Curitiba - PR, Brazil) hydrated with 0.9% saline. A hemostatic sponge (Hemospon®, Maquira Indústria de Produtos Odontológicas S.A, Maringá - PR, Brazil) was positioned over the graft particles to stabilize the surgical socket.

Figure 5: Verification of mesiodistal positioning with Ti-base Avantt.

Prosthodontics Situation

After installing the implant, a temporary crown was created for exclusively aesthetic purposes, in infraocclusion to avoid chewing forces. The correct preparation of the temporary crown in this case makes it possible to maintain the marginal integrity of the periodontium and especially the interdental papillae. After three months, a ceramic crown will be made and the final impression will be taken. The spatial position of the implants was studied based on the prosthetic design, with the vertical positions defined at 2 mm infraosseous.

After installing the components, the torques recommended by the manufacturer were applied. The metallic links (Ø 3.3 × 2.5 mm, Ti base, Systhex®, Curitiba - PR, Brazil) were then installed using the passive cementation technique, and the prosthesis, previously milled in acrylic resin, was positioned. A provisional made of acrylic with space for the through screw to enter was installed during the same surgical procedure, adjusting the occlusion to avoid excessive loads. The provisional, after refined finishing and polishing, did not compress the periodontal tissues and presented good sealing of the socket (Figure 6).

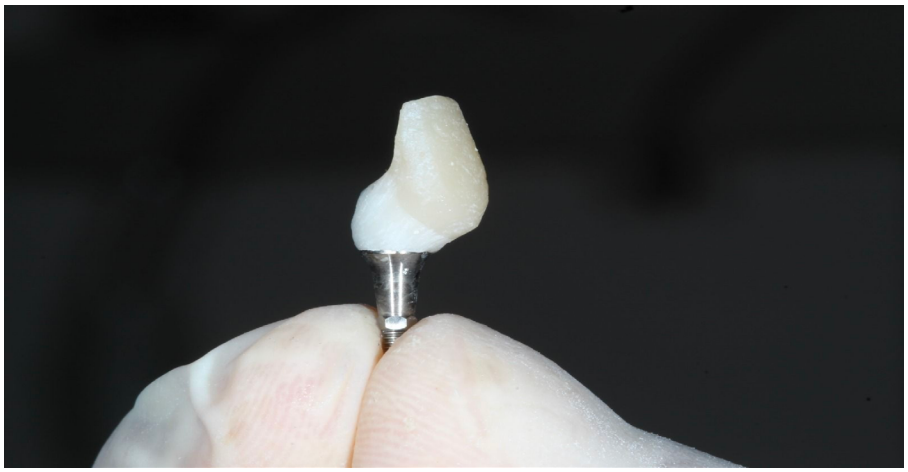

Figure 6: Acrylic provisional with space for the through screw to enter, made on ti-base Avantt.

The described technique provides agility in clinical work and is now fully available without special devices. Demonstrates the possibility of implementing the installation of implants and placement of temporary prostheses, allowing the use of a process already described for rehabilitation in fixed partial dentures (Figure 7).

Figure 7: Final appearance of the surgical bed, fitted with a fixed partial prosthesis.

Immediate provisionalization after extraction of a lateral incisor has significant advantages, such as preserving the gingival contour and maintaining facial aesthetics. In the case described, the minimally invasive approach and immediate installation of the implant allowed rapid rehabilitation, minimizing discomfort and maintaining the patient's self-esteem [3]. However, it is crucial to carefully select cases to ensure the success of the procedure. Factors such as the integrity of the alveolar bone, the initial stability of the implant and periodontal health are determining factors for long-term success [3-11].

Final Considerations

It is concluded that the extraction of lateral incisors with immediate provisionalization is an effective technique to preserve aesthetics and function after tooth loss. The case presented demonstrates that, with an adequate assessment and precise execution, it is possible to achieve satisfactory results, providing the patient with immediate aesthetic rehabilitation and good long-term predictability [12-15].

Data Availability

All data analyzed during this study are available from the corresponding author upon reasonable request.

Disclaimer and Disclosure

All data analyzed during this study are available from the corresponding author upon reasonable request. The authors report no conflicts of interest regarding any of the products or companies discussed in this article.

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Regulatory Statement

A signed informed consent form has been taken from the patient for the disclosure of the case

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