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SINGLE-TOOTH REHABILITATION USING IMPLANTSUPPORTED RESTORATION AND CUSTOM TEMPORARY HEALING ABUTMENT (CTHA) IMMEDIATELY AFTER TOOTH EXTRACTION: A CASE REPORT

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ABSTRACT

This case report describes the treatment of a 37-year-old female patient with no comorbidities who presented with residual roots of tooth 15 that had been previously endodontically treated. After clinical evaluation and imaging studies (panoramic radiographs and computed tomography), minimally invasive extraction was performed, followed by immediate placement of a S.I.N. Epikut® Morse taper implant (3.5 × 10 mm) combined with a Lumina Bone Porous® heterogeneous bone graft. A custom temporary healing abutment (CTHA) was fabricated to maintain the emergence profile. The clinical protocol included postoperative follow-up at 7, 15, 30, and 60 days, with good preservation of periodontal tissues and no inflammation or infection. Subsequently, a provisional resin crown was placed for gingival conditioning, aiming for future completion with a definitive ceramic crown. The case confirms that the association between immediate implant, bone graft and customized healing abutment can favor primary stability and adequate tissue healing.

Keywords: Dental implants, Bone graft, Personalized healing abutment.

INTRODUCTION

Dental implants are recommended for patients with tooth loss or to replace a tooth that requires

extraction.¹⁻⁵ In Brazil, according to a survey by the Brazilian Association of the Medical, Dental, and Hospital Industry, approximately 800,000 implants are placed annually.⁶ Implants can be classified according to the timing of their placement either as late or early.^{7,8} Late implants are placed after complete bone remodeling, 3 months after extraction.⁸ Early implants are placed within one month of extraction, when the periodontal tissue has already healed, and less than three months after extraction, when the bone has not fully healed.⁸⁻¹² When placing an immediate implant, you can choose between a clinical temporary crown,¹³ a standard prefabricated healing abutment, a custom temporary healing abutment (CTHA), or the implant can be buried for a two-stage surgical treatment.¹⁴ Implants that receive screws or standard prefabricated healing abutments and are kept submerged or exposed do not prevent the cervical contour of natural dental crowns from being distorted.¹⁴⁻¹⁹ Tissue recovery around implants is crucial to the success of dental implants, directly affecting their stability and the durability of prosthetic rehabilitation. In this sense, CTHA plays a vital role in soft tissue formation, promoting an appropriate emergence profile and aiding in the adaptation of the final prosthesis.²⁰

CTHA not only helps preserve the health of peri-implant tissues but also protects the operated area from mechanical injury and bacterial infections, reducing inflammation and promoting a more consistent recovery.²¹ Research indicates that its application has a beneficial effect on gingival configuration and soft tissue stability around implants, improving both the aesthetic and functional results of dental rehabilitation.^{20,22} This case report aimed to present a clinical case involving an immediate implant placement and the installation of a customized healing abutment, demonstrating the results and the importance of knowledge of this immediate technique for dentists.

METHODS

Case report

Patient M.T. M, a 37-year-old female with white skin and no comorbidities, presents with endodontically treated residual roots of tooth number #15 (right maxillary 2nd premolar) (Figs. 1-3). After analyzing the imaging exams (panoramic radiograph and computed tomography), the patient agreed to tooth extraction, followed by placement of a dental implant using a bone graft in the region followed by a CTHA. Other tests were requested to assess the patient's general health prior to surgery, including complete blood count, coagulation profile, and fasting blood glucose levels. The results were satisfactory, within normal reference ranges.

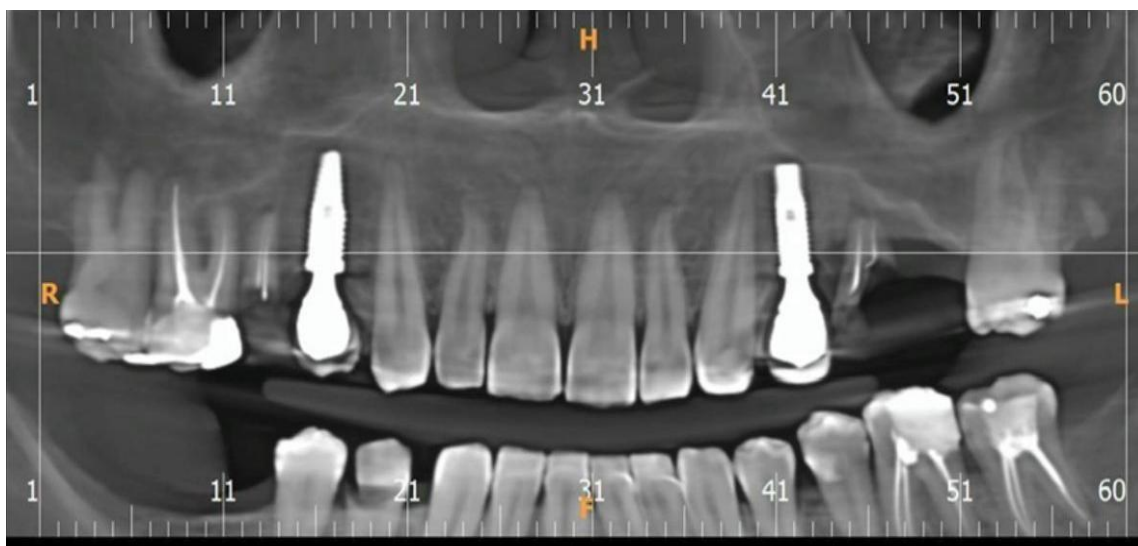


Figure 1. Panoramic radiograph

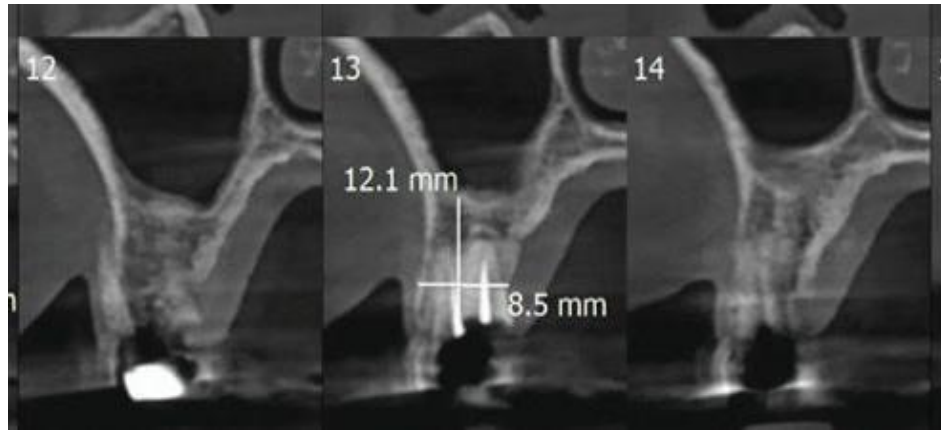


Figure 2. Cone beam computed tomography (CBCT) of #15 (right maxillary 2nd pre-molar) in a sagittal plan.



Figure 3. Remnant roots #15 (right maxillary 2nd pre-molar).

The patient underwent extraction of tooth #15 using a minimally invasive and traumatic technique, with specific instruments to minimize damage and preserve the adjacent structures. Then, a S.I.N. Morse taper implant (n. W070443936; São Paulo, Brazil), Epikut® model, measuring 3.5 mm wide by 10 mm high (Figure 4), was installed (Figure 5), following the manufacturer's instrumentation guidelines; a favorable axis for placement was achieved permitting the creation of a screw-retained prosthesis.



Figure 4. Morse taper implant - S.I.N. Epikut®.



Figure 5. Immediate implant placement.

The remaining alveolar space was immediately filled with a large granulation heterogeneous bone graft (Lumina Bone Porous®, Critéria Biomateriais, São Carlos/SP, Brazil) moistened with saline solution (Figure 6). The implant reached approximately 50 N.cm of torque during installation, which made it possible to create a CTHA in a universal temporary cylinder (Figure 7) connected to the implant using flow-type resin to maintain the emergence profile of tooth #15 (Figure 8). Follow-up appointments were held after 7, 15, 30, and 60 days, after which it was possible to observe the preservation of periodontal tissues. Effective periodontal healing in the case of immediate implants involves primary implant stability, bone preservation, and adequate gingival healing, free from inflammation and secondary infections. A temporary resin crown was fabricated after 30 days to adjust and improve the gingival contours corresponding to the critical and subcritical areas, respectively (Figures 9 and 10). The patient continues treatment in the remaining clinical stages to complete the definitive ceramic dental crown on

the implant.



Figure 6. GAP between implant and socket walls filled with Lumina Bone Porous®.



Figure 7. Custom temporary healing abutment (CTHA).



Figure 8. Gingival profile conditioned by CTHA.



Figure 9. Preparation of the temporary resin crown.



Figure 10. Temporary resin crown installed in the mouth.

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