The Use of Platelet-Rich Fibrin Membrane (PRF) As Barrier for Bone Graft in Immediate Loading of Dental Implants: A Case Report

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Received: October 27, 2015; Published: November 07, 2015

Abstract

The aim of this case report is to present an alternative method to protect the biomaterials and dental implants after implant placement, using the platelet-rich fibrin (PRF) as a protective barrier. During the wound healing, the patient did not experience any adverse reaction, and we conclude that it is possible to use the PRF as a protective barrier of biomaterials for bone grafting in dental implant placement with immediate loading.

Keywords: Dental implants; Biomaterials; Fibrin

Introduction

The PRF (platelet-rich fibrin) was developed in France by Joseph Choukroun, is a second generation of platelet concentrate derived from blood prepared by centrifugation and has been widely used to accelerate the healing of hard and soft tissues [1].

The blood is drawn and immediately centrifuged carefully. The activation of the blood takes place during spinning, and allows the formation of a dense fibrin-platelet clot in the middle of the tube, between the base of red blood cells at the bottom and acellular plasma in the upper part of the tube. [2,3] The clot can be used directly or after a gentle compression to remove excess blood plasma as a resilient membrane.

This membrane has properties as a protective barrier of biomaterials, which can be exposed in the oral cavity without causing contamination of implanted material [4].

The aim of this case report is to present an alternative method to protect the biomaterials and dental implants after implant placement, using the platelet-rich fibrin (PRF) as a protective barrier.

Case Report

Male patient, 24 years of age, healthy, with no history of any systemic disease or past allergies, attended the office with the absence of the maxillary central incisor on the right (Figure 1). After performing the computed tomography scan of the region and clinical assessment of the region, he was advised to oral rehabilitation using dental implant technique of immediate loading. Before the implant placement surgery the PRF was made according Choukron et al. [5] with 18 ml of peripheral blood to make the membrane. To carry out the surgical procedure we used a 3.5 x 13 mm cone morse implant (Neodent®, Brazil). After implant site preparation, a good stability was obtained (50N according to the torque wrench), and the vestibular region gap was filled with hydroxy apatite bone graft (Ostin®, France). After this, we placed the prosthetic abutment of 3.3 mm diameter, 2.5 mm transmucosal and 6.0 mm in height (Figure 2).

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Figure 1: Preoperative.

Figure 2: Implant installed and adapted abutment. It is observed exposure of cervical threads of the dental implant installed.

Figure 3: Hydroxy apatite positioned on the exposed surface of the implant and PRF membrane prior to implantation of the biomaterial.

The PRF membrane was gently positioned to recover the biomaterial (Figure 3 and Figure 4) and a calcium hydroxide was used to cement the temporary crown and the mucosa was sutured with nylon 6-0 (Figure 5). The hygiene of surgical site was performed using a chlorhexidine gel 0.2% and analgesia was obtained with Tylenol® 500 mg every 6 hours for 3 days.
The patient was evaluated after 3 days of post surgical and one time per week until complete 1 month without any complications. After 1 year of post surgical, the clinical peri-implant tissue presented with healthly aspect, good aesthetic (Figure 6 and 7) and the X-ray image showed a maintenance of the crestal bone level to 1 year follow up (Figure 8).

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Figure 7: Postoperative 1 year. Even with the temporary crown.

Figure 8: X-ray postoperative 1 year.

Advantages/Reasons - why we used this membrane
1. The membranes offer lower cost for the realization of the operative procedure;
2. Simplicity in the handling and preparation of membranes;
3. One might add the undisputed biocompatibility of the PRF to the fabric and lower possibility of complications such as infection and membrane exposure;

The PRF membranes are excellent alternatives to all alloplastic membranes, providing the necessary protection for bone formation.

Bibliography

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Volume 3 Issue 1 November 2015
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