Differences of Post-Placement Bone Implant Contact (BIC) Value of Dental Implant Coated and Not Coated With Platelet Rich Plasma (PRP)

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Received: October 26, 2017   Accepted: November 28, 2017   Online Published: December 8, 2017

Abstract

Objective: The success of a dental dental implant treatment focuses on a phenomenon called osseointegration. Evaluation of Bone Area (BA) and Bone-Dental implant Contact (BIC) through histomorphometric analysis is the most widely used parameter to measure osseointegration. The aim of this study was to see post-placement Bone Dental implant Contact (BIC) value of dental implant coated and not coated with PRP.

Materials and Methods: This study was an experimental laboratory conducted at Laboratory of Veterinary Faculty, Hasanuddin University. The sample was baby back rabbit, aged 4-8 months old, weight 1500 - 2000 gram, divided into 2 groups each group consist of 12 rabbit, control group not coated with PRP and treatment group coated with PRP. Data analysis using SPSS version 20.0 (SPSS Inc., Chicago, IL, USA).

Results: There was a significant difference between the mean BIC values and the 20% increase in BIC values in LP1, LP2 and LP3 between treatment and control group on day 0, 3, 7, and 14.

Conclusions: There was a difference in the average of post-placement BIC value of dental implant coated and not coated with PRP.

Keywords: Bone implant Contact (BIC), post-placement, Platelet Rich Plasma (PRP)

1. Introduction

The success of a dental implant treatment focuses on a phenomenon called osseointegration which was first introduced by Brannemark, the microscopic characteristic of bone formation on the surface of the dental implant. Surface composition and roughness are parameters that may play a role in the interaction of dental implanted tissue and osseointegration. Evaluation of Bone Area (BA) and Bone-Dental implant Contact (BIC) through histomorphometric analysis is the most widely used parameter for measuring osseointegration. Platelet-rich plasma (PRP) is an easy and inexpensive way to obtain growth factors in physiologic proportions that might favour the regenerative process. (A.Roffi et al., 2013; Subhaimi & Herda, 2008; Elia et al., 2010; Kurini, 2012)

One of the best sources of growth factors in the body is blood platelets. Growth factors such as platelet-derived growth (PDGF) and transforming growth factor-β (TGF-β), which are present in α-grains of platelets and released in the wound area, have proven to be of vital importance in healing bone, gingiva, and skin. Some researchers have tried to increase osteogenization rates in peri-implant bone by using biological factors, especially PDGFs, commonly known as platelet rich plasma (PRP) or plasma rich growth factor (PRGF). Platelet-Rich Plasma (PRP) is defined as a portion of the plasma fraction of autologous blood having a platelet concentration above baseline. (Thor, 2006; Civinini, 2011; Kundu et al., 2014)

In recent years PRP has widespread diffusion in the treatment of soft tissue and bone healing. Used ordinary dental implants are made of titanium only or titanium alloys with the addition of surface modifications of the dental implant to enhance osseointegration. (Carl, 2007; Malvik et al., 2011; Palwinder, 2011) The scientific basis for this success is the occurrence of osseointegrated dental implants with bone and patient clinical conditions that include