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"A COMPARATIVE EVALUATION OF MICROBIAL LEAKAGE AT THE TITANIUM IMPLANT ABUTMENT INTERFACE AND ZIRCONIA IMPLANT ABUTMENT INTERFACE." - AN INVITRO STUDY."

By

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Dissertation Submitted to the
Rajiv Gandhi University of Health Sciences,
Bangalore Karnataka,

In partial fulfillment of the requirements for the degree of

MASTER OF DENTAL SURGERY (M.D.S.)

in

PROSTHODONTICS

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2013-2016
Rajiv Gandhi University of Heath Sciences,
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Background: The existence of a microgap in two-piece implant system and its potential to act as a reservoir for bacteria which induces peri-implant tissue inflammatory reactions has been well documented in the literature. Titanium has long been the dental implant material of choice. However the inherent problem concerned with titanium is the esthetic one. Tremendous increase in the patient's demands and expectations from dental implant treatment has made the clinicians prefer Zirconia implants in the recent years. The purpose of this study is to investigate the microleakage at the implant abutment interface between two piece implants namely zirconia and titanium.

Objective: 1) To evaluate the microbial leakage at titanium implant abutment interface. 2) To evaluate the microbial leakage at zirconia implant abutment interface 3) To analyse and compare microbial leakage at titanium implant abutment interface and zirconia implant abutment interface.

Method: Twenty two piece implants (10–titanium, 10-zirconia) were subjected to scanning electron microscopic examination to assess the microgap at the implant abutment interface.2 implants from each group were immersed in sterile BHI broth and incubated for 72 hours (37 degree Celsius) to check for sterility. After 72 hours all the 4 broths were found to be sterile and the implants were considered to be sterile. Then the implants were put in enterococci inoculated BHI broth and incubated at 37 degree Celsius for 5 days (120 hours). Following this the implants were placed in the hypochlorite solutions for 30 minutes and then in saline for 5 minutes to.2 implants were taken from each group as controls to test the effectiveness of hypochlorite solution. These implants were placed in sterile BHI broth without dismantling to test the surface sterility. The remaining 16 implants (8 in each group) were dismantled and placed in sterile BHI broth

in their respective groups. The 5 ml broth from each of the test tubes was poured in sterile Petri plates and mixed with 15ml molten BHI broth at 50 degree Celsius was added to the individual plates. Plates were allowed to set and incubated for 48 hours. After 48 hours colony count was taken from the individual plates on a colony counter.

Results: In the Titanium implant group the mean microgap at the implant abutment interface was found to be 119.6 ± 9.46. and mean microleakage was 77 ± 11.16 CFU/ml. In the Zirconia implant group, the mean microgap was 117.2 ± 5.26 and mean microleakage was 24 ± 5.23 CFU/ml. Mann-Whitney U-test showed the microgap was statistically non-significant between the two groups($p>0.05$), and the microleakage difference was statistically significant between the two groups ($p<0.05$)

Conclusion: Although the microgap between the implant abutment interface of Titanium and Zirconia implant groups did not differ significantly and microleakage was present in both the groups, it was significantly lesser in the Zirconia implant group as compared to the Titanium.