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Diagnosis of early carious lesions using laser diode near-infrared transillumination (*in-vitro* study)

Introduction: The resin cement is recommended to cement the implant fixed prosthesis. Efforts to remove the excess cement protruding after seating restoration, an entrapment of residual cement in the peri-implant tissues can be detected.

Objective: The aim of this study was to detect the retained excess resin cement around tissue level and bone level dental implants following two different cementation techniques.

Materials & Methods: Fourteen tissue level implants (group A) and fourteen bone level implants (group B), (OCO Biomedical, Inc. Albuquerque, USA) were screwed in a drilled models (Salvin Dental Specialties, Inc. Charlotte, USA) having a rubber surface covering, simulating the gingiva. Twenty-eight metal copings were fabricated and were cemented to the implant's abutments by RelyX U200 dual-cure resin cement. Each group was further sub-divided according to the cementation technique into two subgroups (n=7): sub-group A1, B1: Tack cure of the excess cement for three seconds and the excess partially set resin cement was carefully removed before complete cure. And subgroup A2, B2: 1mm occlusal vent was performed on the occlusal surface of the metal copings. Excess cement from the vent and the margins were carefully removed followed by a full cure. The rubber coverage on the models was removed and any retained cement was collected and the net weight was determined. All specimens were visually examined from all sides under 30X magnification using Stereomicroscope (SZ-11, Olympus, Japan).

Results: The tissue level implant following the tack cure protocol had less retained excess cement percentage than the occlusal vent protocol. Statistically, the comparison showed a significant difference in the retained excess cement percentage within the tissue level subgroups ($p=0.018$), no statistically significant difference was observed within the bone level sub-groups techniques ($p=0.096$). There was the statistically significant difference between non-vented tack cure and occlusal vent techniques regardless of the implant type ($P=0.004$), with more retained excess cement percentage with the vent technique. No statistically significant difference between tissue level and bone level implants regardless of the cementation technique, with more, retained excess cement percentage in the bone level implants. Our result also showed complete seat of the prosthetic core on the abutments with 1 mm vent hole that sealed the margins properly. Again stereomicroscope showed seepage of the cement around the micro thread at the bone level implants.

Conclusions: Tack curing of excess resin cement during the cementation of implant-supported restorations might reduce the cement residue, but still couldn't remove the problems of excess resin cement around dental implants. Implants inserted at the bone level might need extra precautions to avoid the problem of retained excess cement that may affect implant.

Biography

Samir A Koheil DDS, MS, FICOI is now Emirate Professor of Conservative Dentistry Department, Faculty of Dentistry Alexandria UN, Egyptian UN Dental Program Consultant of Conservative Dentistry. Supervise master and Ph.D Thesis. Head of Dental Department of Conservative Dentistry Department. Program director for post graduate program of Conservative Dentistry. Committee Member for paper evaluation of research acceptance for Assistant professor and Professor all over Egypt UN. He has a private practice, Implant Cosmetic Dental Center Alexandria Egypt. Established dental department in Saudi Arabia (Mecca), established dental implant office and program at Elmaghraby Hospital, Saudi Arabia (Jeddah).

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