

Abstract

Assessment of The Effects of Surface Roughness and Height of 15 Degrees Angled Abutments on Tensile Bond Strength of Cement Retained Implant Restoration Under Vertical Forces

Introduction: Easy retrieval is the main advantage of using provisional luting agents for cementation of cemented type implant supported prosthesis. However, adequate retention is also required. The purpose of this study was to the effects of surface roughness and height of 15 degrees angled abutments on tensile bond strength of cement retained implant restoration under vertical forces.

Materials and methods: In this laboratory study, 30 titanium abutments (15 pieces of 3 mm and 15 pieces of 5 mm) were screwed into their analogs. One third (n=10) of the abutments had no surface preparation, one third had a groove and one third was sandblasted. Zirconia copings were cemented on the abutments with KERR cement, and after placing the samples in the temperature cycle and rebuilding the oral environment, the samples were subjected to vertical forces by the universal test device and their tensile band strength was measured. For the statistical analysis of the obtained data, two-way analysis of variance was used in SPSS software version 21. A significance level of less than 0.05 was considered.

Results: The results showed that the tensile band strength in sandblasted abutments (70.76 ± 39.38) was higher than grooved abutments (52.57 ± 23.98) and plain abutments (35.72 ± 21.96). ($P < 0.05$) and only there was a significant difference between the tensile band strength of sandblasted abutments and simple abutments ($P < 0.05$), no significant difference was observed in the rest of the pairwise comparison. Also, the tensile band strength of the examined abutments was affected by the height of the abutments ($P < 0.05$).

Conclusion: The surface modification of abutment by sandblasting increases the strength of the tensile band, this change was affected by the height of the abutments too.

Keywords: Surface Roughness, Abutment, Tensile Bond Strength, Cemented Implant Prosthesis.