

## **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 inclined forces**

**Introduction:** One of the important challenges in the field of cemented implant restorations is the tensile band strength under the influence of inclined forces, however, studies in this field are rare, so this study aims to assessment of the effects of surface roughness and height of 15 degrees angled abutments on tensile bond strength of cement retained implant restoration under inclined forces.

**Materials and methods:** In this experimental study, a total of 30 titanium abutments were prepared, consisting of 15 abutments with a height of 3 mm and 15 abutments with a height of 5 mm. The abutments were divided into 6 groups, with 5 samples in each group. The samples in the six groups were either unprepared-grooved or sandblasted. The samples were placed in a universal testing machine, and a force was applied at a speed of 0.5 mm per minute to separate the copings from the abutments under inclined force. The force required to dislodge the copings from the abutments was recorded in Newtons, and finally, it was analyzed using one-way analysis of variance between groups and Tukey's test in SPSS version 24 software, the significance level was considered less than 0.05.

**Results:** The results showed that there is a significant difference in tensile band strength in the simple abutment group ( $34.40 \pm 3.28$ ), sandblasted abutment ( $66.51 \pm 3.13$ ) and grooved abutment ( $50.55 \pm 2.62$ ). Also, by increasing the height of the abutment from 3 mm to 5 mm, the strength of the tensile band increased in the examined abutments, but this increase was significant only in the grooved abutments ( $P=0.033$ ).

**Conclusion:** The present study showed that the surface roughness of the abutment has an effect on the tensile band under the inclined force, but this effect was not affected by the height of the abutment in the sandblasted and grooved group.

**Keywords:** surface roughness, abutment, tensile bond strength, cement-retained implant prosthesis.