

# ISPITIVANJE UTICAJA HRPAVOSTI BRUŠENIH ZUBA NA VEZIVANJE LIVENIH KRUNICA CINK FOSFATNIM CEMENTOM

## INVESTIGATION OF THE PREPARED TEETH ROUGHNESS EFFECT ON THE CAST CROWNS BONDING BY ZINC PHOSPHATE CEMENT

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### **Kratak sadržaj**

Cilj rada je bio da se u in vitro uslovima utvrdi uticaj hrapavosti brušenih zuba na jačinu vezivanja cinkfosfatnim cementom krunica od legure NiCrMo.

U eksperimentu je korišćeno 20 intaktnih humanih premolara preparisanih za livenu krunicu i podeljenih u dve grupe u zavisnosti od postignute hrapavosti. Površine brušenih zuba izračunate su matematičkim putem, hrapavost dentina merena je profilometrom i verifikovana SEM-om. Za svaku grupu napravljene su standardnom metodom krunice od legure NiCrMo i cementirane cinkfosfatnim cementom. Nakon 7 dana obavljeno je testiranje jačine veze brušenih zuba i eksperimentalnih livenih krunica, u kidalici, mehaničkim putem.

Utvrđena je veza između profila ostvarene hrapavosti patrljaka sa dobijenim vrednostima retencionih sila.

Sa povećanjem hrapavosti brušenih zuba povećava se i jačina vezivanja između livenih krunica i patrljaka kada se kao vezivni materijal koristi cinkfosfatni cement. Pобољшanje jačine vezivanja na opisani način može da smanji potrebu za dodatnim načinom vezivanja kao što je formiranje okluzalnih ili aproksimalnih žlebova. Ovo nisu isključivi faktori ali svakako mogu biti od značaja za trajnost fiksnih zubnih nadoknada.

**Ključne reči:** hrapavost brušenih zuba, livena krunica, cinkfosfatni cement

### **Abstract**

The purpose of this work was to establish in vitro conditions the effect of the prepared teeth roughness on the NiCrMo crowns bonding strenght by zinc phosphate cement.

Used in the experiment were 20 intact human premolars prepared for a cast crown and divided into two groups depending on the roughness achieved. The surfaces of the prepared teeth were counted mathematically, while the dentin roughness was measured by a surfstest and verified by SEM. For each group, crowns made from the NiCrMo alloy were made by a standard method and cemented by zinc phosphate cement. Upon seven days, the prepared teeth and experimental cast crowns bonding strenght test was mechanically carried out in a dynamometer. Bonding between the profiles of the achieved roughness of the stumps with the obtained retentive forces values was found out.

Increasing the prepared teeth roughness the bonding strenght between the cast crowns and the stumps increases when zinc phosphate cement is used as a bonding material. Increase in the bonding strenght in the described way may cause the need for additional method of bonding to be decreased such as forming of occlusive or approximal grooves. These are not exclusive factors, but they may be of significance for the fixed dentures durability.

**Key words:** prepared teeth roughness, cast crown, zinc phosphate cement