

PENGARUH SURFACE TREATMENT PADA RESTORASI RESIN KOMPOSIT INDIREK TERHADAP KEKUATAN GESER PELEKATAN SEMEN BIOAKTIF

INTISARI

Restorasi resin komposit indirek membutuhkan bahan perekat/ sementasi yang baik agar bisa menahan beban pengunyahan. Kekuatan ikatan semen pada *fitting surface* restorasi bisa ditingkatkan dengan *surface treatment*. Belum banyak kajian terhadap ikatan semen bioaktif ke restorasi resin komposit indirek. Tujuan penelitian ini adalah untuk mengetahui pengaruh *surface treatment* pada restorasi resin komposit indirek terhadap kekuatan geser pelekatan semen bioaktif.

Spesimen penelitian ini adalah 28 buah restorasi resin komposit indirek berbentuk silinder berdiameter 5 mm dengan tinggi 4 mm dan difiksasi pada blok akrilik. Spesimen penelitian dibagi menjadi 4 kelompok dengan perlakuan *surface treatment* yang berbeda. Kelompok I diberi *surface treatment* dengan aplikasi asam fosfat 37%, kelompok II diberi *surface treatment* aplikasi asam fosfat 37% dan bonding, kelompok III *surface treatment* aplikasi asam fosfat 37%, silan dan bonding dan kelompok IV adalah kelompok kontrol. Semen bioaktif diinjeksikan atas permukaan yang telah dilakukan *surface treatment* menggunakan cetakan berbentuk silinder berdiameter 5 mm dan tinggi 4 mm. Aplikasikan sinar *Light curing unit* tegak lurus permukaan semen. Cetakan dibuka dan spesimen di sinar kembali sisi samping masing-masing 20 detik. Semua spesimen direndam dalam saliva buatan pH 7 dalam inkubator selama 24 jam untuk proses *setting* semen bioaktif dalam simulasi kondisi rongga mulut. Uji kekuatan geser menggunakan *Universal Testing Machine* dilakukan untuk mengukur kekuatan geser pelekatan semen bioaktif terhadap spesimen dengan satuan *Mega Pascal* (MPa). Data kemudian dianalisis dengan uji statistik ANAVA satu jalur.

Hasil uji statistik menunjukkan perlakuan *surface treatment* yang berbeda menggunakan etsa, silan, bonding pada restorasi resin komposit indirek mempunyai kekuatan geser pelekatan terhadap semen bioaktif yang tidak berbeda atau sama ($p > 0,05$).

Kata kunci : *kekuatan geser, pelekatan, restorasi indirek, semen bioaktif, surface treatment.*

SHEAR STRENGTH OF BIOACTIVE CEMENT TO INDIREK KOMPOSIT RESIN RESTORATION WITH DIFFERENT SURFACE TREATMENTS

ABSTRACT

Indirect composite resin restorations require adequate adhesive to withstand load of mastication. The bond strength of cement to the fitting surface of restoration can be increased by surface treatment. There have not been many studies on the bonding of bioactive cement to indirect composite resin restorations. The purpose of this study was to determine the effect of surface treatment on indirect composite resin restorations on the adhesive shear strength of bioactive cement.

This study used 28 specimens of indirect composite resin restorations in the form of a cylinder with a diameter of 5 mm and a height of 4 mm and fixed on an acrylic block. The specimens were divided into 4 groups with different surface treatment. Group I was given surface treatment with 37% phosphoric acid application, group II was given surface treatment with 37% phosphoric acid application and bonding, group III was given surface treatment with 37% phosphoric acid application, silane and bonding and group IV was the control group. The bioactive cement was injected into the treated surface using a cylinder mold with a diameter of 5 mm and a height of 4 mm. Apply Light curing unit beam perpendicular to the cement surface. The mold was opened and the specimens were irradiated for 20 seconds each side. All specimens were immersed in artificial saliva pH 7 in an incubator for 24 hours for the setting process of bioactive cement in simulated oral conditions. The shear strength test using the Universal Testing Machine was carried out to measure the shear strength of the adhesion of bioactive cement to the specimen in Mega Pascal (MPa) units. The data were then analyzed using one-way ANOVA statistical test.

The results of statistical tests showed that different surface treatment using etching, silane, and bonding on indirect composite resin restorations had no different or the same shear strength of adhesion to bioactive cement ($p > 0.05$).

Keywords: adhesion, bioactive cement, indirect restoration, shear strength, surface treatment.