

**PERBEDAAN KEKUATAN GESER RESIN KOMPOSIT  
BERDASARKAN KEDALAMAN KAVITAS  
PADA BONDING GENERASI V**



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**ABSTRAK**

**Latar Belakang :** Resin komposit merupakan bahan restorasi estetik yang paling banyak digunakan dalam bidang kedokteran gigi. Resin komposit tidak dapat berikatan secara alami dengan struktur gigi sehingga diperlukan suatu bahan adhesif yaitu bahan bonding. Bonding generasi V memiliki kekuatan perlekatan yang baik pada enamel dan dentin. Kekuatan perlekatan bahan bonding terhadap struktur gigi dapat diukur dengan uji kekuatan geser.

**Tujuan :** Mengetahui perbedaan kekuatan geser resin komposit berdasarkan kedalaman kavitas pada bonding generasi V.

**Metode Penelitian :** Merupakan penelitian eksperimental laboratoris dengan *post test only control group design*. Sampel 30 gigi premolar post-ekstraksi dibagi menjadi kelompok perlakuan dengan kedalaman kavitas 2 mm, 3 mm, dan 4 mm. Sampel dipreparasi dan direstorasi menggunakan bonding generasi V dan resin komposit *bulkfill*. Pengukuran kekuatan geser menggunakan *Universal Testing Machine*.

**Hasil :** Nilai rata-rata kekuatan geser resin komposit pada kedalaman kavitas 2 mm sebesar 18,670 Mpa, kedalaman kavitas 3 mm sebesar 29,950 MPa, dan kedalaman kavitas 4 mm sebesar 42,380 MPa. Hasil analisis uji *One Way ANOVA* menunjukkan  $p < 0,05$  sehingga terdapat perbedaan yang bermakna antara nilai kekuatan geser resin komposit pada beberapa kedalaman kavitas pada bonding generasi V.

**Kesimpulan :** Terdapat perbedaan yang bermakna antara kekuatan geser resin komposit dengan kedalaman kavitas 2 mm, 3 mm, dan 4 mm pada bonding generasi V. Kekuatan geser resin komposit pada kedalaman kavitas 4 mm lebih baik daripada kekuatan geser resin komposit pada kedalaman 2 mm dan 3 mm.

**Kata kunci :** kekuatan geser, kedalaman kavitas, bonding generasi V

# DIFFERENCES OF COMPOSITE RESIN SHEAR STRENGTH BASED ON THE DEPTH OF CAVITY ON FIFTH GENERATION BONDING AGENT

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## ABSTRACT

**Background :** Composite resin is the most frequently used aesthetic restoration material in dentistry. Composite resin can not naturally bond with tooth structure, therefore an adhesive material like bonding agent is strongly needed. The fifth generation of bonding agent has a good bond strength to enamel and dentin. Bond strength of bonding agent could be measured with shear strength test.

**Aim :** To find the differences of composite resin shear strength based on the depth of cavity on fifth generation bonding agent.

**Method :** This study was laboratory experimental with post test only control group design. 30 samples of post extracted pre molar teeth were divided into treatment groups with cavity depth 2 mm, 3 mm, and 4 mm. The samples were prepared and restored using fifth generation bonding agent and bulkfill composite resin. The shear strength was measured with universal testing machine.

**Result :** Mean value of composite resin shear strength are 18,670 MPa on 2 mm depth of cavity, 29,950 MPa on 3 mm depth of cavity, and 42,380 MPa on 4 mm depth of cavity. One Way ANOVA test result showed that the value of  $p < 0,5$ . So it is concluded that statistically there is significant difference of composite resin shear strength in various cavity depth on fifth generation bonding agent.

**Conclusion :** There was significant difference of composite resin shear strength between cavity depth of 2 mm, 3 mm, and 4 mm in fifth generation bonding agent. The shear strength of composite resin in 4 mm depth of cavity was proven stronger than either depth of cavity.

**Keyword :** shear strength, depth of cavity, fifth-generation bonding agent