## THE EFFECT OF REPEATED BONDING ON SHEAR BOND STRENGTH OF DIFFERENT ORTHODONTIC ADHESIVES

(An in vitro study)

A thesis submitted to the

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By

Akram Adnan Sabri

B.D.S

Supervised by

Prof. Dr. Ausama Ahmed Al-Mulla

B.D.S. Dr. D. Sc.

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## Abstract

One of the problems clinicians face during orthodontic treatment is bracket failure. In a busy orthodontic practice, a significant number of teeth will need to be rebonded.

This study was carried out to determine and compare the shear bond strength after repeated bonding with two-paste adhesive (alpha-dent), nomix adhesive (orthodontic bonding system no-mix), and light cure adhesive (illuminate).

Thirty sound human upper right first premolars were collected and divided into three groups, in each group mesh-backed stainless steel bracket standards edgewise (Ultratrim) were bonded to the buccal surface of the teeth using one of the above mentioned adhesive systems.

The samples were subjected to shear test using universal testing machine and the results were recorded in megapascal unit (Mpa). After that, the remaining adhesive on the buccal surface of the each tooth was removed using tungsten-carbide finishing bur in contra angle handpiece, and then the tooth was polished. The bonding/debonding sequence was repeated for three times and in each sequence, a new bracket was used using the same type of adhesive. Then the results were statistically analyzed using one-way ANOVA analysis test and T-test.

The results showed that Two – paste adhesive have significant shear bond strength than Illuminate adhesive, and highly significant shear bond strength than no - mix adhesive in the first bonding/ debonding sequence. In addition, Two- paste adhesive has significant shear bond strength than nomix in the second bonding/debonding sequence, while there were no significant differences between adhesives in the third bonding/debonding sequence. In addition, there is no significant difference between shear bond strength of first and second and of second and third bonding/debonding sequences of each composite adhesive system.

The failure site was determined after first, second and third bonding/debonding sequences, and it was found that failure site was predominantly at the composite-bracket interface for all adhesive systems.