

- **The Influence of Different Enamel Cavo-surface Configurations on the Marginal Leakage of Class V Composite Restorations using different adhesive systems. *Alex. Dent. J. April 2006.***

**Emad M. Khattab\* ; Magda El-Eraky\* and Khalid Noaman\*\*.**

**Abstract**

**Purpose:** This in vitro study investigated the effect of different cavosurface preparations: butt joint; long bevel & scalloped bevel at both cervical and occlusal margins of class V composite restorations bonded with two currently used different adhesive systems Scotchbond Multipurpose Plus & Prompt-L-pop; after thermal and mechanical load cycling simulating one year of clinical service. **Methods:** Rectangular class V cavities on the buccal surfaces of 60 permanent lower molar teeth; with the occlusal margin in enamel just below the buccal deflection ridge; and the cervical margin just above the cemento-enamel junction. The teeth were randomly divided into three main groups (I; II & III) of 20 teeth each; according to the different cavosurface configurations. Each group was further subdivided into 2 subgroups (A & B) of 10 teeth each according to the type of bonding agent used. All cavities were restored using Z 250 composite resin. All specimens were thermo-cycled for 600 cycles; prior to cyclic chewing loads of approximately 24000 cycles applied to the center of the restoration corresponded to one year of clinical service. The marginal microleakage was investigated through dye penetration technique evaluated at the occlusal and cervical interface. Data were collected; tabulated and statistically analyzed by multifactorial ANOVA models with interactions. For multiple pairwise comparisons; the Tukey method was used ( $\alpha = 0.05$ ).

**Results:** The results of the present study showed that microleakage scores at the cervical margins in all groups “different margin preparations” and subgroups “using different bonding agents” were greater than those at the occlusal margins; though not all results were significantly different. It was also found that subgroup (A) Scotchbond MP bonding agent performed better with lower leakage scores than subgroup (B) Prompt-L-Pop in relation to both occlusal and cervical sites and also in relation to the different tested margin preparations. The combination of group (II) “Long bevel” and subgroup (A) “Scotchbond MP” recorded no leakage at all; while the combination of group (III) “Scalloped bevel” and subgroup (B) “Prompt-L-Pop” had the highest occlusal leakage score mean values. The same pattern of leakage scores was also observed in the cervical site where “group (II) + subgroup (A)” combination revealed the lowest leakage scores; while the combination of “group (III) + subgroup (B)” gave the highest cervical leakage scores.

**Conclusion:** Occlusal microleakage scores were lower than the cervical microleakage scores for all cavosurface margin preparations and also in relation to the two adhesive systems used. Scotchbond MP adhesive performed better than self etching primer Prompt-L-Pop. Long bevel cavosurface margin preparation gave best results compared to the other two margin preparations used “butt joint and scalloped bevel” in both occlusal and cervical sites of class V cavities.

\* Lecturer of Conservative Dentistry; Faculty of Dentistry Tanta University.

\*\* Ass.Professor of Conservative Dentistry; Faculty of Dentistry Azhar University; Assiout .