

1878 Microleakage in class V cavities after load cycling. S.H. KANG, T.Y. LEE*, and H.H. SON, Seoul National University, South Korea

Flowable and microfill composites have been recommended for Class V cavities. But the use of flowable composites is controversial because of its physical properties. Objectives: The aim of this study was to evaluate the microleakage of 6 composites (2 hybrids, 2 microfills, and 2 flowable composites) without load cycling. Methods: Notch-shaped Class V cavities were prepared on buccal surfaces of 80 extracted human upper premolars and then divided into non-load cycling group(G1) and load cycling group(G2). All preparations were restored with 6 composites shown in the Table (n=15). Samples of G2 were subjected to occlusal load (100N/50,000cycles;MTS 858, MTS Systems Corp., Minneapolis, Minn.). All samples were immersed in 2% methylene blue for 24 hours, and sectioned. Enamel and dentin margins were analyzed on a scale of 0(no leakage) to 3(3/3 of wall). Kruskal-Wallis One way analysis and Mann-Whitney U-test were used to analyze the results. Results: There was no significant difference among 6 composites in both enamel and dentin margins of G1 and G2. Load cycling did affect dentin margins restored with Revolution only (P<0.05).

Table with 7 columns: Composite, Z-250, Denfil, Heliomolar RO, Micronew, AeliteFlo, Revolution. Rows include G1/E, G1/D, G2/E, G2/D with numerical values and standard deviations in parentheses.

Table. Mean microleakage value (S.D.)

Conclusions: There was no significant differences in microleakage of Class V cavities restored with hybrid, microfills, and flowable composites (P>0.05). Microleakage was not increased under load cycling except dentin margins restored with Revolution.

1879 Microleakage in composite restorations using pulse delay technique. M. POLONIATO*, I. P. BURMANN2, P.E.C. CARDOSO3, and T. MELOZ, 1 University Cidade de São Paulo, Brazil, 2 Federal University of Santa Maria, Brazil, 3 University of São Paulo, Brazil

Recent researches indicate that high-intensity polymerization generates high levels of tension, which may promote marginal fractures and microcracks. One of the suggestions to eliminate this problem is the use of alternative photopolymerization techniques. Objectives: This study attempts to evaluate the microleakage of occlusal composite resin restorations cured through the pulse delay technique. Material & Methods: 20 extracted human third molars were prepared for class I occlusal restorations (5mm length, 3mm width, 3.5mm depth). Single Bond (3M-ESPE - USA) was applied according to manufacturer's instructions, and the restorations were incrementally build up with Filtek Z250 composite resin (3M-ESPE - USA), cured through the occlusal position by the following protocol: Group 1: each increment was cured for 30 seconds - 500 mW/cm2 (n=10); Group 2: the first two increments (filling the cavity up to the dentin-enamel junction) were cured for 30 seconds - 500 mW/cm2, and the third (last) increment was cured for 3 seconds - 300 mW/cm2, followed by a 5 minutes waiting period, and a final cure for 30 seconds - 500 mW/cm2 (n=10). The specimens (sp) were stored in water for 24 hours, subjected to 700 cycles of thermal challenge (5 - 55oC, 1 minute dwell time), and finally sealed with nail varnish, in such a way that only the restoration and its margins were exposed to the silver nitrate solution utilized to mark the leakage spots. The visual evaluation was carried after sectioning the sp. Results: all the interfaces evaluated presented zero degree microleakage. Kruskal-Wallis showed no significant differences (P>0.05). Conclusions: the photopolymerization technique had no influence on microleakage of composite resin class I restorations surrounded by enamel.

1880 Influence of mechanical load cycling in cervical microleakage of class II resin restorations associated with self-etching adhesive system. R. BRAZ*, R.C. UCHOÁ, M.N. CORREIA, A.M.V.C. LYRA, and S.C. LORETTO, Faculdade de Odontologia de Pernambuco, Brazil

Objective: The aim of this in vitro study was to evaluate the influence of the mechanical load cycling and the capacity of marginal hinder of a self etching adhesive system in the cervical microleakage of 160 restorations(80 teeth) class II(vertical slot of Alquist)in extracted human molars, using resin composed by high load density (Filtek P-60 - 3M). Methods: the specimens were divided in 04 groups, group 1(G1), that didn't suffer mechanical load, being established as a control group, group 2, 3 and 4(G2, G3 and G4). Each group was subdivided in two subgroups (A and B), where the subgroup A were just accomplished with the self-etching adhesive (Prompt-L-Pop - 3M/ESPE), and the subgroup B being conditioned with 37% phosphoric acid previously the application of the self-etching adhesive system. The specimens were submitted to the mechanical load cycling with totals of 10, 50 and 100 cycles respectively,through occlusal loading of 1 and 17 Kg, immersed, simultaneously, in a dye agent of 0,5% methylene blue. After, all the specimens were rinsed in flow water for 24 hours. Then, were sectioned and evaluated in optical microscope (scale from 0 to 4).Results:the values obtained were submitted to Kruskal-Wallis and Mann-Whitney Tests, with the level of significance of 5%. All groups presented microleakage not related with the number of mechanical cycles, and the use of etching previously self-etching adhesive systems was not able to avoid microleakage. Conclusion: regarding with the found results, it is indicated the use of 50 mechanical cycles for occlusal loading.

1881 Microleakage in class V restorations of deciduous teeth prepared with Er:YAG laser. A. RAMOS*1, N. PULGAZ, M. VIEIRA3, F. PULGAZ, and C.P. EDUARDO4, 1 UNIVERSITY OF SÃO PAULO; 2 UNIVERSITY OF FORTALEZA, Brazil, 2 UNIVERSITY OF SÃO PAULO; IPEN, Brazil, 3 IPEN, Brazil, 4 UNIVERSITY OF SÃO PAULO, Brazil

Objectives: the evaluation of microleakage in class V restorations of deciduous teeth prepared using Er:YAG laser and comparison to the ones observed when conventionally prepared, using composite resin and glass ionomer cement, was the subject of this study. Methods: the laser used was the KaVo KEY II with wavelength of 2.94mm. energy of the 300 mJ, repetition rate of 3 Hz and energy density of 86mJ/cm2. Twenty eight deciduous teeth were divided into four groups: G1 - prepared with high speed drill + composite resin; G2 - prepared with high speed drill + glass ionomer cement; G3 - prepared using Er:YAG laser + composite resin and G4 - prepared with Er:YAG - glass ionomer cement. After the restoration the specimens were stored at 37° C for 24 hours, thermally stressed, immersed in 50% aqueous solution of silver nitrate for 24 hours while kept in the dark . The specimens were rinsed in water, soaked in photodeveloping solution and exposed to fluorescent light for 6 hours. After this process the sample were sectioned and observed by stereomicroscopy. For comparison the groups were divided into occlusal and cervical microleakage. The results were analyzed under the Kruskal-Wallis test. Results: for the occlusal microleakage the statistical significance was 5% among the groups and the average comparison showed higher microleakage for G1 (M=35.1) than for G2 (M=24.0) as well as compared to G3 (M=22.3). The other groups didn't present statistical differences among them. For the cervical microleakage the Kruskal-walls test didn't present any statistical difference. Comparing the occlusal and cervical microleakage data, for every group, using the Wilcoxon teste, no statistical differences was observed. Conclusions: this study showed the Er:YAG laser to be effective for class V restorations and to result in a smaller microleakage degree using the composite resin.

1882 Effect of Class II cavity configuration on microleakage of composite restorations. P.S.L. PRAZERES*1, P.A. BURMANN2, P.E.C. CARDOSO3, and E.H. DUTRAZ, 1 Universidade Santo Amaro, USA, 2 Federal University of Santa Maria, Brazil, 3 University of São Paulo, Brazil

Objectives: Verify the effects of class II cavity configuration (retentive or expulsive) and the restorative system (adhesive/composite) on the marginal microleakage of restorations. Materials & Method: 80 human molars were distributed into 8 groups (n=10): Group 1) retentive class II cavity restored with Clearfil SE Bond+Clearfil APX (Kuraray) [SE/APX]; 2) expulsive cavity restored with [SE/APX]; 3) retentive cavity restored with One Step+Renew (Bisco) [OS/R]; 4) expulsive + [OS/R]; 5) retentive cavity restored with Excite+Tetric Ceram (Vivadent) [E/T/C]; 6) expulsive + [E/T/C]; 7) retentive cavity restored with Single Bond+Z250 (3M, USA) [SB/Z250]; 8) expulsive + [SB/Z250]. The composites were cured (VIP, Bisco) in three layers. The samples were stored for 24 hours and then polished, after which they were submitted to thermocycling (5-55 oC 700 x 1 min.), sealed using fingernail varnish and stained in silver nitrate. The teeth were sectioned in the middle (MD) resulting in one evaluation for each restoration. The images of the sections were digitalized in order to evaluate the microleakage. Results: The average results of 3 examiners were submitted to statistical analysis (ANOVA).

Table with 8 columns: Group, 1, 2, 3, 4, 5, 6, 7, 8. Row Scores: 0.27 a, 0.66 a, 2.52 b, 2.5 b, 3.02 b, 2.62 b, 0.58 a, 0.75 a

Conclusions: For all restorative systems tested the cavity configuration (retentive or expulsive) did not affect the results of microleakage. However, it was possible to detect that the systems SE/APX and SB/Z250 presented statistically lower marginal microleakage than the systems [OS/R] and [E/T/C].

1883 Marginal adaptation of condensable composite resin using different curing techniques. S.K. PEREIRA*, J.C. SOUZA, L.L. SOUZA, M.I. TRIERWEILER, and F.A. SANTOS, UNIVERSIDADE ESTADUAL DE PONTA GROSSA and UNIVERSIDADE PARANAENSE, Brazil

Advances in technology have introduced new materials and new curing methods to the market. Objectives: The aim of this in vitro study was to examine the effect of three curing techniques on the extent of marginal gap in class II cavities restored with one condensable resin Surefil (Dentsply) and Prime & Bond NT. Methods: Conservative class II cavities (n=60) were prepared in 30 extracted human teeth (on mesial and distal faces) with cervical margins placed in enamel. The cavities (4x3x2mm) were prepared using a diamond bur (4137 KG Sorensen). All the restorations were cured with the light source KM-100R (DMC-Ltda) for 40 seconds. The teeth were divided into three groups as follows: GI- the cavities were restored using polyester matrix and reflective wedge with three-sided light curing technique; GII- steel matrix and wood wedge were used and the material was cured with softstart-polymerization; GIII- steel matrix and wood wedge were associated with bulk technique and conventional cure. The cervical margins were evaluated after thermal cycling (5°C and 55°C for 500 cycles) by quantitative scanning electron microscope (SEM) analysis using an image analyzing system. Results: The ANOVA test revealed significant differences among the GI and GIII (p<0.05). The three-sided technique (GI) showed the lowest gap formation when compared to the bulk technique (GIII). Conclusions: These findings indicated that the curing technique did affect the marginal gap formation of class II condensable resin restorations. This study was supported by PIBIC/CNPq-Brazil.

1884 Microleakage of indirect class-V restorations using a new self-etching dentin bonding agent. C.A. MUNOZ, A. ESPINOSA*, J.R. DUNN, and J. SY, Loma Linda University School of Dentistry, USA

Objective: This study evaluated the microleakage of class V indirect composite restorations using two Self etching dentin bonding agent (DBA) (Excite SE) and Clearfil SE Bond and two conventional DBA (Single Bond (3M) and Excite DSC (Ivoclar). Methods: Forty-second molars had Class V preparations on the mesial and distal walls so that the upper wall of the preparation was on enamel and the cervical wall is at the level of the cemento-enamel junction. For Excite SE, Excite DSC and Clearfil SE Bond, Heliomolar indirect restorations were made. For Single Bond, Z100 resin was used. The inlays were cemented using manufacturer's recommended technique for placement of the DBA and the cement. A new Astralis 10 (Ivoclar/Vivadent) was used to polymerize the specimens for 40 seconds. The teeth were stored for 7 days at 37 C in 100% humidity and thermocycled for 2000 cycles (5-55 C). The teeth were sealed and immersed in Fuchsin dye for 24 hours, pumiced, sectioned M-D and microleakage was ranked 0 to 4 with 0=no microleakage and 4=Dye penetration along axial wall. Ten Class-V restorations were made for each group. ANOVA and Newman Keuls Test were used to identify differences (P<0.05). Results: Excite SE had a mean occlusal microleakage of 0.29 and 0.01 in dentin as compared to Single Bond that had 0.08 and 0.46 respectively. Clearfil Se Bond had 0.21 on enamel and 0.01 in dentin. Excite DSC had 0.01 on enamel and 0.5 on dentin. Microleakage was not statistically different between Clearfil SE Bond and Excite SE. There was also no difference between Excite DSC and Single Bond. Conclusions: (1) All materials exhibited Microleakage at the dentin and the enamel interface. (2) The self-etching adhesives had more microleakage at the enamel, while the conventional adhesives had more microleakage at the dentin.

1885 Influence of salivary contamination on marginal microleakage of pits and fissures sealants. M.C. BORSATTO*, A.G. ALVES, S.A.M. CORONA, D.T. CHIMELLO, and R.G. PALMA DIBB, University of São Paulo - Ribeirão Preto Dental School, Brazil

Objectives: The aim of this study was to assess quantitatively "in vitro" the influence of salivary contamination on marginal microleakage of pits and fissures sealants. Methods: Forty-eight sound third molars were selected and randomly assigned into six groups: I - application of resinous sealant; II - salivary contamination + resinous sealant; III - adhesive system + resinous sealant; IV - salivary contamination + adhesive system + resinous sealant; V - ionomeric sealant; and VI - salivary contamination + ionomeric sealant. Acid etching was accomplished with 40% polyacrylic acid and 37% phosphoric acid, previously to the application of the ionomeric and resinous sealants, respectively. For contamination of the specimens, it was used 0.1ml of fresh human saliva from an only person, for 20 seconds, followed by surface drying. The ionomeric sealant Ketac-Fil (ESPE/3M), the adhesive system Single Bond (3M) and the resinous sealant Fluoroshield (Dentsply) were used. The samples were thermocycled for 500 cycles, immersed in 0.2% Rodamine B for 24 hours, embedded in acrylic resin and sectioned. Microleakage analysis was accomplished by using an optical microscope linked to a camera and a computer. A digitized image was obtained and dye penetration at buccal and lingual cusps heights was assessed quantitatively in millimeters. Results: The averages obtained were: I-0% (=0%); II-31.71% (±31.69%); III-0% (=0%); IV-0% (=0%); V-0.98% (= 2.79%) e VI-11.82% (= 15.45%). The results were submitted to ANOVA and Tukey Test, and it was observed that salivary contamination favoured significantly marginal leakage. The association of adhesive system/sealant promoted a complete marginal sealing, independently of the condition. Conclusions: It was concluded that in the presence of salivary contamination, the association of the adhesive system to the resinous sealant sealed completely the tooth/sealant interface. The ionomeric sealant presented a better marginal sealing than the resinous sealant under contamination.

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