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GRUPO BRASILEIRO DE MATERIAIS DENTÁRIOS
FACULDADE DE ODONTOLOGIA DE BAURU
20-23 JULHO DE 2003

**01- Infrared spectroscopy applied to determination of alterations in the structure of alginates submitted to the gamma rays. CASEMIRO L.A.; PANZERI, F.C.; PANZERI, H. (Faculdade de Odontologia de Ribeirão Preto – USP)**

The goal of this work was to verify the effect of the gamma radiation in four brands of comercial irreversible hydrocolloid (Jeltrate® - Dentsply, Avagel® - Dentsply, Hydrogum® - Zermack and Kromopan® - Lascod), by infrared spectroscopy. The alginates were subjected to the gamma radiation from a source of 60Co, in their own commercial packing (in situ), in an irradiator (mod. JS 7500, Nordion, Canada). Five samples of each brand were subjected to the following doses of gamma radiation: 0, 5, 10, 15, 20 and 25KGy. The spectra of the materials were obtained in a Fourier Transform spectrometer (FT) operating at the infrared (Nicolet mod104), in the reflectance mode using KBr of spectroscopic degree, as reflectance standard. The correlation analysis of the spectra allowed to identify that there was no structural alteration of the materials. Hence, it is possible to consider that the physical and mechanical properties of the alginate selected also remain unaffected after the irradiation with gamma radiation.

**02- Evaluation of the accuracy of dual-arch impression trays. SPOHR, A.M.; TAVARES, J.G.; CARVALHO, G.L.; LANG, .R. - Faculdade de Odontologia da PUCRS, Porto Alegre, RS**

The purpose of this research was to evaluate the accuracy of a metallic (Smart) and plastic (Triple Tray – DFL) dual-arch trays employed with vinyl polyxiloxane materials. The impressions were realized in a typodont with complete superior and inferior archs, and the maxillary right first molar was prepared for a full-ceramic crown. There were four groups: 1- metallic tray with Express (3M); 2- metallic tray with Honigum (DMG); 3- plastic tray with Express; 4- plastic tray with Honigum. The impression materials were applied in the tray and on the prepared tooth according to the one-step technique, and the impression was cast in die stone (Durone). Five impressions were made with each of the two tray types with each material. The buccolingual and the mesio-distal width at the gingival margin of the prepared tooth (control) and the casts were measured 5 times in each width in a perfil projector V16 (Nikon). The results were submitted to Mann-Whitney test ($p<0.05$). In the mesio-distal width, group 3 (10.23 mm) was statistically superior to the control (10.20 mm), and there was no difference of groups 1 (10.21 mm), 2 (10.22 mm), 4 (10.19 mm) with the control. In the buccolingual width, the control (9.05 mm) was statistically superior to groups 3 (8.98 mm) and 4 (8.99 mm), and there was no difference of groups 1 (9.04 mm), 2 (9.05 mm) with the control. The metallic dual-arch tray reproduced with more accuracy the dimensions of the prepared tooth.

**03- Evaluation of the dimensional estability of dental alginates. HERRERIAS*, T.; ABREU, M.A.; MOREIRA-FILHO, M.; GIOVANNINI, J.F.B.G.; SOUZA, E.L.; LANZA, L.D.. Department of Restorative Dentistry/FO-UFMG - Department of Metalurgy and Materials/EEUFMG - jfgabrich@zipmail.com.br**

This study aimed to evaluate the dimensional stability of dental alginates available in the market. The selected materials were Jeltrate$^{Ó}$ (Dentsply) and Kromopan$^{Ó}$ (Lascod), being the last characterized by the manufacturer as modified with the possibility to obtain the model within 100 hours without alteration of its properties. The tests involved the use of a pre-manufactered dispositive to obtain the impressions. The materials were proportioned and manipulated according to the respective manufacturer, and the impressions were taken at room temperature. After the impressions were obtained, two points were selected as reference in the surface, being the distance between them determined by comparative optical microscopy (Mitutoyo). Variations in this distance characterized the dimensional alteration presented by the materials in different times: imediately after the impression, 15min., 30min., 45min., 1h, 2h, 12h, 24h and 100h. Between these intervals, the impressions obtained with both materials were kept in a controlled humidity. The samples of Kromopan$^{Ó}$ were kept in a hermetically closed box, following the manufacturer's instructions. It was concluded that the alginates evaluated in this study showed significant alterations in its dimensions over time. Contrary to manufacturer's information, Kromopan$^{Ó}$ was not capable to keep its initial dimensions for 100 hours. Therefore, to obtain reliable models, the impressions obtained with both alginates should be imediately poured.

**04- Effect of the flask cooling on the teeth movement in maxillary complete dentures. CONSANI, S.; CONSANI, R.L.X.; MESQUITA, M.F., TANJI, M. Materiais Dentários – Faculdade de Odontologia de Piracicaba - UNICAMP**

This study verified the effect of the method of flask cooling on the teeth movement of maxillary complete dentures made with Clássico thermoactivated acrylic resin by the pressing traditional technique. Twenty stone cast-wax plate base with artificial teeth were made in a semi-adjustable articulator arranged in occlusal guide with the lower stone cast teeth. The specimens were randomly assigned in 2 groups of 10 elements each and included in metallic flask by traditional technique, according to following experimental protocol: Group 1- conventional pressing, polymerization in water at 74ºC for 9 hours, starting 12 hours after final pressure, and deflasking after curing water-cooling. Grupo 2- conventional pressure and polymerization were the same of the group 1, and deflasking after water-cooling plus bench storage for 3 hours. The changes in the linear teeth position were verified with a comparator microscope (Olympus), with tolerance of 0.0005 mm. Collected results in mm were: I-I (water= 7.23 and water + bench=7.06), PM-PM (water= 39.76 and water + bench=39.79), M-M (water= 52.84 and water + bench=52.92), RI-RM (water=37.32 and water + bench=38.22) e LI-LM (water=35.20 and water + bench=35.56). The data were subjected to ANOVA and Tukey's test at significance level of 5%. The method of flask cooling did not alter the linear teeth position when the dentures were pressed by the traditional technique.

**05- Effect of post-pressing time on the surface hardness and impact strength of acrylic resins. TANJI, M.; CONSANI, R.L.X.; MESQUITA, M.F.; MARCHESE, M.P. (Prótese Dental e Oclusão, Fac. Odontologia de Lins – UNIMEP)**

This study investigated the influence of the post-pressing time on the surface hardness and impact strength of Clássico, QC-20 and Onda-Cryl acrylic resins. Thirty specimens were made with an aluminium die (65x10 and 64x9 x 3,0 mm) attached to a wooden plate. The dies were molded with Zetalabor silicone used for laboratory purposes and the molds were included into metal flasks or reinforced fiberglass flasks. The proportion and mixture, as well as acrylic resin pressing were made according to manufacturer's instructions. The acrylic resins were cured in water at 74ºC for 9 hours, boiling water for 20 minutes or by microwave energy with 1100W for 10 minutes. The specimens were removed after flasks cooling and subjected to polishing by conventional procedure. Subsequently, were subjected to hardness test (Shimadzu) with load of 25 grams by 10 seconds and to impact strength test with Charpy system in a Wolpert machine. The results for Knoop hardness were: Clássico (immediate = 16.64 and 24 h = 17.56), QC-20 (immediate = 11.11 and 24 h = 16.07) and Onda-Cryl (immediate = 18.43 and 24 h = 19.34) and for the impact strength Clássico (immediate = 7.45 and 24 h = 7.33), QC-20 (immediate = 8.12 and 24 h = 5.51) and Onda-Cryl (immediate = 8.06 and 24 h = 7.46). The data were subjected to ANOVA and Tukey's test at significance level of 5%. The post-pressing time influenced only the hardness of the Onda-Cryl acrylic resins. Similar results were observed for the impact strength of the QC-20 acrylic resins in the 24 hours post-pressing time.

**06- Effect of the RS tension system on the linear teeth shift in complete dentures. CONSANI, R.L.X.; MESQUITA, M.F.; SINHORETI, M.A.C.; CORRER SOBRINHO, L. (Prótese Total – Fac. Odontologia de Piracicaba – UNICAMP)**

The purpose of this study was to verify the linear teeth movement in maxillary denture made with Clássico heat-cured acrylic resin, polymerized in water at 74ºC for 9 hours, influenced by pressing with the RS tension system and deflasking after water cooling or water-cooling plus bench for 3 hours. Twenty stone casts-wax plate base with artificial teeth, mounted in semi-adjustable articulator, arranged at occlusal guide with teeth of a lower stone cast, were randomly assigned in 2 groups of 10 elements and included in metallic frasks by routine technique, in order to receive the following experimental treatments: Group 1- RS pressure, polymerization in water at 74°C for 9 hours, starting 12 hours after the definitive pressure and deflasking after water-cooling. Group 2- RS pressure and polymerization were similar to Group 1, and deflasking after water-cooling plus bench for 3 hours. The I-I, PM-PM, M-M, RI-RM and LI-LM teeth distances were determined after base polymerization, with a linear comparator microscope (Olympus), with tolerance of 0.0005 mm. The mean distances (mm) among teeth were: I-I (water = 7.17 and water + bench = 7.27), PM-PM (water = 39.80 and water + bench = 39.96), M-M (water = 53.10 and water + bench = 53.17), RI-RM (water = 38.04 and water + bench = 37.70) and LI-LM (water = 34.17 and water+ bench = 34.09). The data were subjected to ANOVA and Turkey's test at 5% of significance level. The linear teeth shift was not influenced by the method of the flask cooling when the complete dentures were flasked with the RS tension system.

**07- Evaluation of the transverse bond strength of artificial teeth and heat-cured acrylic resin denture bases. SAAVEDRA, G.S.F.A.*; SINHORETI, M.A.C.; KIMPARA, E.T.; NEISSER, M.P. Department of Dental Materials and Prosthesis UNESP/SJC - Brazil**

The union imperfections beween the acrylic resin denture base and resin teeth represent a significant problem. The aim of this study was to evaluate, by means of a non-axial compressive stress test, the transverse strength at the bases confectioned with heat-cured acrylic resin (Classico-[C]) and acrylic resin teeth (Vitapan-[Vp] and Vivadent-[Vv]) interfaces, abraded [S] or not [N]. Twenty samples were confectioned and divided into four groups (n=5), correlating two variables: teeth and surface treatment. The mechanical test was performed in a universal test machine (Emic-dl-2000), with crosshead speed of 0,5mm/min. All data were submitted to analysis of variance (5%). The mean values and standart deviations (kgf) obtained were, respectively: G1- Vp/C/S=14,21 (1,07), G2- Vp/C/N=14,63 (3,51), G3- Vv/C/S=13,67 (0,73), G4- Vv/C/N=13,37 (1,95) and shown no statistical differences among them.
According to the results obtained it was possible to conclude that: 1- There were no statistical differences between Vp and Vv teeth in all conditions tested; 2- the surface treatment did not modify significantly the results.
Financial Support: FAPESP - process n° (02/00624-0)

**08- Effect of the palladium-silver alloy recast on the cervical and internal adaptation of metallic crowns. LOPES, M.B.; CONSANI, S.; SINHORETI, M.A.C.; CORRER-SOBRINHO, L. School of Dentistry of Piracicaba - UNICAMP**

This study evaluated the cervical and internal fit of crowns, casted and recasted with palladium-silver alloy (Pors-on 4), with different marginal configurations: straight shoulder, bevel shoulder and chamfered. Thirty aluminium dies were prepared, 10 for each marginal configuration. The dies were waxed using a cylindrical matrix to standardize the thickness of the walls. The wax patterns were invested in a phosphate investment (Deguvest) and cast after heated in an oven (EDG). The specimens were seated on the dies and the marginal discrepancy was measured with a microscope (Carl Zeiss), using a digital micrometer (Mitutoyo), with accuracy of 0,001 mm. The samples were embedded in polyester resin and longitudinally cut for internal discrepancy measurements, using the same method as for the marginal discrepancy. The data in µm for cervical fit were: new alloy (bevel shoulder = 0.00; chamfered = 0.00 and straight = 0.00) and recast (bevel shoulder = 236.14; chamfered = 69.98 and straight = 41.88); occlusal: new alloy (bevel shoulder = 79.59; chamfered = 78.40 and straight = 125.13) and recast (bevel shoulder = 188.30; chamfered = 129.93 and straight = 168.70) and axial: new alloy (bevel shoulder = 0.00; chamfered = 0.00 and straight = 0.00) and recast (bevel shoulder = 69.16; chamfered = 100.75 and straight = 113.50). The results were subjected to ANOVA and Tukey's test (5%). The new alloy showed better adaptation and the marginal configurations did not affect the adaptation. Adaptation of recast alloy was influenced by the marginal configuration, with best results for the straight shoulder.
Financial support: CAPES

**09- Evaluation of the cervical adaptation of metal-free ceramics crowns before and after cementation BORGES, G.A; CONSANI, S.; SINHORETI, M.A.C.; CORRER-SOBRINHO, L.; DE GOES, M.F. Uberaba University and School of Dentistry of Piracicaba - UNICAMP**

The purpose of this study was to evaluate the cervical fit before and after cementation of Cergogold and In Ceram crowns, on bovine teeth preparation with two cements. Thirty crowns with 8.0 mm in diameter and 8.5 mm in height were fabricated for each ceramic system. After, the crowns were seated on the teeth with 9 kgf load for 1 minute and the marginal discrepancy was determined using a measuring microscopic (STM). Afterwards, the crowns were removed and 15 samples of each ceramic system were luted on the teeth with resin cement (Variolink II) and 15 with glass ionomer cement (Vitremer) and the marginal discrepancy was measured again. The results were subjected to analysis of variance and Tukey's test (5%) and indicated that the ceramics In Ceram and Cergogold luted with Variolink II showed cervical fits after cementation (121 mm and 104 mm) statistically superior than cervical fits before cementation (81 mm and 69 mm). The crowns luted with Vitremer, the cervical fits after cementation (111 mm and 95 mm) were statistically superior than cervical fits before cementation (81 mm and 69 mm). No statistically difference was observed between In Ceram and Cergogold after cementation with Vitremer (111 mm and 95 mm) and Variolink II (121 mm and 104 mm).
The cervical fit after cementation was superior of the before cementation. No difference was observed between the two ceramic systems after cementation, with the two cements.
Financial support: CNPq

**10- The effect of ceramic and ceromer indirect adhesive restorations on the fracture resistance of tooth structure. COELHO, J.C.B.; PEREIRA, J.C.; SOARES, C.J.; FERNANDES NETO, A.J.; NEVES, F.D., SILVA, G.R. School of Dentistry/UFU – Biomechanics group.**

This study evaluated the fracture resistance of prepared teeth restored with indirect restorative materials: ceromer (Solidex – Shofu) or pressable ceramic (Cergogold – Degussa). Forty sound pre-molars were selected and divided into four groups (n=10). The group I received a MOD preparation; the group II were left intact; the group III received MOD preparations that were restored with ceramic restorations; the group IV received MOD preparations that were restored with ceromer restorations. The restorations were adhesively fixed and then subjected to a compressive load on a universal testing machine with a crosshead speed of 0.5 mm/min until fracture. The results were subjected to the statistical analysis by means of one-way ANOVA ($p<0.05$), demonstrating statistical differences among the four groups. Tukey test was then applied, showing that the prepared teeth had statistically lower values of fracture resistance. The mean values of fracture resistance in kgf (SD) were: G1: 20,47 (5,02); GII: 41,02 (20,09); GIII: 43,53 (19,59); GIV: 48,44 (19,62). There were no statistical differences among the restored teeth and the intact ones. The fracture pattern of prepared, intact and ceromer restored teeth showed a more extensive tooth involvement, while teeth restored with ceramic showed fractures within the restoration.
Supported by: FAPEMIG

**11- Evaluation of marginal adaptation in class II preparations using P60 composite resin in three different techniques. MARTINS JUNIOR, L.O; VAZ, R.R.; JANSEN, W.C.;LARA, M.V.Z. - Materiais Odontológicos FOUFMG**

The aim of this study was to verify the marginal adaptation of P60 polymerized by three different methods. Thirty specimens were made in thirty stone models poured in polyvinilsiloxane molds of a class II stainless steel master model. The specimens were separated in three groups with ten specimens each. Each resin restoration was constructed in two increments of 0,2g each. The first was applied in the pulpal, gingival and axial walls. Then, an acrylic ring was adapted around the model and a second increment was condensed and pressed with a glass plate under 200g of load. All groups were polymerized in four cycles: at first, the increment without the ring, after the condensation, after removed the ring and out of the stone model, with the pulpal wall outside. In the group I, the polymerization time was 180s using a Xenon Unit (Protécnica). The groups II and III used Translux CL polymerized for 40s. In the group II, after light activation cycle, the specimens were post-cured in boiling water for ten minutes, in a plastic bag. The specimens were inserted in the master model only one time with a 1,0 Kgf vertical force applied during one minute and the marginal adaptation measured in optical microscope. The results were analyzed by Kruskal-Wallis test ($p>0,01$) and we can conclude that there is no statistical difference between the three methods of polymerization.

**12- Wear evaluation with the O.H.S.U. Oral Wear Simulator in molar primary teeth. CUNHA, M.R.B. da; RONTANI, R.M.P.;FERRACANE, J.L.;CORRER SOBRINHO, L. Faculdade de Odontologia de Piracicaba/ UNICAMP – Oregon Health & Sciences University/**

The purpose of this study was to use the OHSU Oral Wear Simulator to evaluate and correlate "in vitro" wear on enamel and restorative dental materials in primary teeth. Composites (Z250, Heliomolar, Point 4, Surefil); compomers (Dyract AP, F2000) and a resin-modified glass-ionomer (Vitremer) were placed into class I cavities (4 x 2 x 1 mm deep) cut into the enamel surface of primary molars. The restored teeth were aged 1 day in water at 37 degrees Celsius and mounted in the OHSU oral wear simulator, covered with a slurry of poppy seeds/PMMA beads and subjected to 100 K cycles of wear against a primary enamel stylus. The specimens (n = 6) were positioned to produce abrasive wear (load = 20 N) across one margin. Wear on material and was estimated from 2 profilometric tracings perpendicular to the abrasion margin, and then differentiated into composite and enamel degradation. Results were compared with ANOVA and Tukey's test at $p < 0.05$.Vitremer showed the highest wear (84.51 ± 9.78 mm). Dyract and F2000 were statically higher ($p<0.05$) than composites but not different between each other. Surefill showed less wear (14.48 ± 4.41mm) but there was no statistical difference ($p<0.05$) among the other composites. Pearson's correlation ($r^2= 0.86$) was significant for material abrasion and enamel antagonist abrasion.
The OHSU oral wear simulator was a useful adjunct for the study of wear on primary enamel and there is a correlation between the wear on restorative dental materials and abrasion on primary enamel.

**13- ABSENT**

**14- The fatigue and fracture strength of three ceramic systems in dry and wet environments. CORRER SOBRINHO, L.; SINHORETI; M.A.C.; CONSANI, S.; REGES, R.V.; KNOWLES, J.C. Materiais Dentários – FOP/UNICAMP, Brasil, Eastman Dental Institute, UK.**

The aim of this study was to evaluate the influence of fatigue on the fracture strength of IPS Empress 2, In Ceram and Cergogold in both dry and wet environments, luted with glass ionomer cement (Vitremer). Forty five crowns with 8.0mm in diameter and 8.5mm height were fabricated for each ceramic system. After glazing, the crowns were luted onto bovine teeth with Vitremer and stored in distilled water at 37º C for 24 hours. Afterwards, for each ceramic systems, 15 specimens were tested for fracture strength without fatiguing in an Instron at a crosshead speed of 1.0 mm per minute, 15 was submitted to a fatigue for 60,000 cycles with 2 Hz and in dry and 15 in wet environments and then fractures. The results were statistically analysed using ANOVA and Tukey´s test (5%) and showed that the fracture strength for In Ceram (1,182N) and IPS Empress 2 (1,153N) were significantly stronger than Cergogold (767N). No difference was found between In Ceram and IPS Empress. The strength of the In Ceram, IPS Empress 2 and Cergogold decreased significantly after fatiguing in both dry (926N; 867N and 568N) and wet (759N; 709N and 512N) environments. No difference was found between fatiguing in dry and wet environments. For the three systems fatigued in a dry and wet environments and the fractured tested, In Ceram and IPS Empress 2 were significantly stronger than Cergogold. The In Ceram and IPS Empress 2 showed the highest fracture strength. The fatigue in dry and wet environments promoted decreased on the final fracture strength, for the three ceramic systems.
FAPESP Proc. 01/07687-4

**15- Castibility evaluation of Ti-10Mo alloy. RODRIGUES, F.P.; BAUER, J.R.O.; ALVES, A. P. R.; ALVES REZENDE, M. C. R. Departamento de Materiais e Tecnologia – UNESP – Faculdade de Engenharia de Guaratinguetá/SP**

The use of titanium has increased in dentistry because of its good mechanical properties, excellent corrosion resistance and biocompatibility. However, some of the mechanical properties of cast pure titanium, such as strength, are not sufficient for certain dental applications. One way to improve some properties for wider usage in dentistry is to alloy titanium. The purpose of this study was to evaluate how experimental titanium-molybdenium [ 10% Mo (mass%)] alloy filled a mold cavity. The experimental alloy was made by melting pieces of titanium(CP) and molybdenium into one 15g button in a argon-arc melting furnace. To evaluate castibility, wax sheet patterns were invested in a silica-based mold. Casting was performed in a centrifugal casting machine at 1650º C and the molds were air-cooled. After casting, the fluidity was analysed using light microscopy and stereomicroscopy. The results showed that samples failed to reach center of the molds. As to impure titanium and other titanium alloys, the experimental alloy titanium molybdenium failed in filling the mold cavity.

**16- Comparison of the microhardness of composite resin with or without the superficial layer (Mylar matrix). BARBOSA, S. H.; VALANDRO, L. F. ; BOTTINO, M. A.; MELO, R. M.; LEITE, F. - Department of Dental Materials and Prothodontics – São José dos Campos Dental School, UNESP**

The aim of this study was to verify if the superficial layer of composite resin, polymerized with the aid of a Mylar matrix, which is supposed to have the larger amount of organic matrix, have influence on their microhardness. Twenty specimens of the TPH composite resin were confectioned by using a metallic matrix (5X4mm). The resin was placed in the matrix in two layers and each one was light cured for 40s with LED (Ultra-Lume – Ultradent). Each side of the sample was covered with a Mylar matrix (Dentart) and two glass plates (1,2mm thick) to assure a flat surface. The superior glass plate was removed before light-curing, which was performed on the superior side of the sample. The samples were stored in distilled water for 24 hours. Ten samples were polished with #600, 800 and 1200 wet paper and ten samples were not polished. The microhardness was measured with a Vickers hardness tester (FM 700 – Future-Tech – Equilam) under a 10-second dwell time and 50 g load conditions. An exploratory data analysis was performed to determine the most appropriate statistical test. Descriptive statistics data for non polished samples (mean±standard deviation: 55,31±1,99; median 55.55) and for polished samples (91,61±10,65; 90,15) were subjected to unpaired t-test (Student). The result showed that non polished samples differ statiscally from the polished samples. The same result was obtained with non-parametric test (Mann-Whitney test). The polished composite resin showed higher hardness values.

**17- Evaluation of surface roughness on composite restorations covered by sealant agents. SANTOS, P.H.; PAVAN, S.; CONSANI, S. ; CORRER-SOBRINHO, L.; SINHORETI, M.A.C.; BORGES, G.A.; ALONSO, R.C.B.; REGES, R.V. Piracicaba Dental School, UNICAMP, Brazil.**

The aim of this study was to evaluate the effects of sealant agents containing or not filler on the surface roughness of composite restorations. Fifty class V composite restorations (Z250, 3M) were made in human molars and subjected to finishing and polishing procedures using Sof-Lex system (3M). The teeth were divided in groups according to the sealant agent used: G1–control, without application of any material;G2–surface penetrating sealant Fortify(Bisco);G3–surface penetrating sealant with filler Fortify Plus(Bisco);G4–Single Bond adhesive system(3M);G5-Opti Bond Solo Plus filler adhesive system(Kerr). The restorations were evaluated with a SurfCorder SE 1700 profilometer to verify the surface roughness. The teeth were subjected to 60000 mechanical toothbrushing cycles using MSEt toothbrushing machine. After this step, the surface roughness was measured again. The results showed that before the toothbrushing, the lower surface roughness values were obtained for groups 4 (0,1936ìm), 1 (0,2081ìm) and 2 (0,2328ìm), without significant difference between them ($p>0,01$). Higher values were obtained for groups 5 (0,4033ìm) and 3 (0,4938ìm) ($p<0,01$). After the toothbrushing process, there was no difference among the groups ($p>0.01$). The control group (1) was the only one that showed difference in the roughness before and after the toothbrushing (0,2081ìm and 0,3536, respectively), with significant difference between these values. The application of sealant agents without filler like Single Bond and Fortify was effective in promoting less values of surface roughness in composite restorations.

**18- The influence of different surface treatments and metal conditioners on adhesive bonding of two composite materials to cast Titanium. SCHNEIDER, R.; CORRER SOBRINHO, L.; DE GOES, M.F. Department of Dental Materials– FOP-UNICAMP; Dental Materials and Prosthodontics- ULBRA**

The purpose of this study was to evaluate the surface preparation effects of air abrasion and polishing on bonding of two adhesive luting composite system to cast Titanium with and without previous metal conditioners application. Eigthy rod specimens (1.3 mm diameter) cast from c.p. Titanium were ground (#180, 400, 600 and 1000 abrasive papers). Forty specimens were sandblasted with 50 µm aluminum oxide. A rod (1.3 mm diameter) of Panavia Fluoro Cement (Kuraray) or Rely X Arc (3M) was bonded on the specimens surfaces. In half specimens of each composite the metal conditioners recommended by manufacturers were applied on the surface before the bonding of the composites. Thus, eight test Groups resulted: Group 1 (G1)-Panavia bonded to polished Titanium with Metal conditioner (MC); Group 2 (G2)- Panavia bonded to polished Titanium without MC; Group 3(G3)-Panavia bonded to sandblasted Titanium with MC; Group 4(G4)-Panavia bonded to sandblasted Titanium without MC; Group 5(G5)-Rely X bonded to polished Titanium with MC; Group 6(G6)- Rely X bonded to polished Titanium without MC; Group 7(G7)- Rely X bonded to sandblasted Titanium with MC; Group 8 (G8)- Rely X bonded to sandblasted titanium without MC. After 24 h at 37ºC water storage, the microtensile bond strength (MTBS) test was performed. Three- way ANOVA (0.05) and Tukey's (0.05) tests were applied to the results. The statistical analysis revealed that MTBS values were affected by all factors tested. The greatest MTBS mean was reached by G3(15,81 MPa) followed by G4 (15,67 MPa), G1 (12,66 MPa), G7 (10,18 MPa), G5(9,66 MPa), G2(9,56 MPa), G8 (7,37 MPa) and G6 (3,18 MPa).There was not statistical difference only between G3 and G4 means, between G2 and G5 and G5 and G7 means.

**19- Evaluation of the bond strength of titanium cast with different final temperatures of investment heating. OLIVEIRA, P.C.G.; ADABO, G.L.; RIBEIRO, R.F.; ROCHA, S.S.; FONSECA, R.G.; CRUZ. C.A.S. Araraquara Dental School – UNESP – Department of Dental Materials and Prosthesis**

Titanium casting represents several complications, such as the difficulty to inject it into moulds at low temperatures. Flow was observed to be enhanced when hotter moulds are employed; however there is no information as to the effect of mould temperature on the mechanical properties of titanium. The aim of this study was to evaluate the bond strength of CP Ti and the Ti-6Al-4V alloy with variation on the final temperature of investment heating, employing the temperature recommended by the investment manufacturer as a control. Dumb-bell specimens were fabricated in wax according to the E-8M regulation of the ASTM and embedded in the Rematitan Plus investment. Casting was conducted on a Discovery machine (EDG) with three different final temperatures of investment heating: control group (430ºC), T1 (480ºC) and T2 (530ºC). After casting, integrity of the specimens was radiographically observed and a tension essay was carried out on a mechanical testing machine MTS model 810. Data were subjected to analysis of variance and Tukey test, which yielded the following mean results and respective standard deviations: CP Ti (control group) – 486.10 and 58.8783; T1 – 501.16 and 26.7498; and T2 – 498.64 and 61.0145. Concerning the Ti-6Al-4V alloy, the following outcomes were observed: control group – 961.33 and 11.9681; T1 – 958.26 and 19.3307; and T2 – 1005.80 and 63.1202. It was concluded that the Ti-6Al-4V alloy demonstrated numerical statistically higher bond strength (975.13MPa) than the CP Ti (495.30MPa), and that the investment temperature did not statistically influence the bond strength of any material.
Financial support: CNPq

**20- The influence of total recast of a Ni-Cr alloy on the bond strength of ceramic. ALMEIDA, A.F.B; BORGES, G.A., ALMEIDA, M.A.B.; OLIVEIRA,W.J., WANDERLEY, A.C.N. Faculdade de Odontologia da Universidade de Uberaba.**

This study evaluated the influence of the total recast Ni-Cr alloy on the bond strength of ceramic. Ten samples were cast with new alloy and the remain with 100% recasted alloy. Wax patterns were fabricated with a dimension of 25x3x1mm. The wax patterns were sprued and invested with a phosphate-bonded investment (Bellavest, Bego). After the elimination of the wax, the VeraBond 2 (AAlbaDent) alloy was melted with an oxygen gas flame and the invested patterns were cast with centifugal cast machine. The metal strips were machine-milled (Ferdimatk N80 - Kristavorts - Brëmen - Germany) to the dimensions of 25x3x0,5mm. After the metal treatment, the ceramic (Vita Ômega 900) was applied on the central portion (8x3x1mm) following the recommendations of the manufacturer. Bond strength test was performed with a three-point flexural device on a EMIC LD3000 universal testing machine, equipped with load cell of 50Kg. The data were subjected to the analysis of variance and t-test ($p<0.01$). The results showed that the new alloy resulted in bond strength values of 33,68N, while recast alloy resulted in 11,93N. The bond strength of new Ni-Cr alloy/ceramic was three times greater than total recast alloy/ceramic.

**21- Bond strength between a resin cement and two ceramic systems: effect of ceramic surface treatment. VALANDRO, L.F.[1]; LEITE, F.[2]; ANDREATTA FILHO, O.D.[2]; GUIDINI, A.[2]; SCOTTI, R.[3]; BOTTINO, M.B.[2] ([1]Federal University of Santa Maria, [2]UNESP-São José dos Campos, [3]Alma Mater Bologna University – Italy).**

The objective of this study was to test the follow hypothesis: the silica coating on ceramic surface increase the bond strength between resin cement and ceramic (alumina- and zirconium-based ceramic). Ten blocks (6mmx6mmx4mm) of each ceramic were fabricated (In-Ceram Zircônia for Cerec InLab [ZIR] and Procera AllCeram [PRO]). All ceramic blocks were duplicated in composite resin (Clearfil AP-X). One ceramic surface of each block was polished with 600-, 800- and 1200-grit SiC paper. The blocks were divided in four groups (G), depending on the ceramics and surface treatments: G1 – ZIR + SAND (sandblasting with 110µm $Al_2O_3$); G2 – ZIRC + CoJet System (sandblasting with 30µm silica particles + ESPE-Sil); G3 – PROC + SAND; G4 – PROC + CoJet. The ceramic blocks were cemented to the corresponding composite blocks using Panavia F resin cement, according to the manufacturer's instructions, under a load of 750g/10min. The cemented blocks were stored in distilled water (37ºC/7 days) and sectioned in both x and y directions, with a diamond disk under refrigeration in order to obtain the non-trimming samples - SP (6 SP per group – n=30) with 1 ± 0.1mm² of adhesive area. Each SP was attached to an adapted device with cyanoacrylate and the tensile test was carried out in a universal testing machine EMIC - crosshead speed of $1mm.min^{-1}$. The obtained data (MPa) were subjected to ANOVA and Tukey's test ($p<0.05$): G1 – 15.15ab; G2 – 26.81c; G3 – 12.70a; G4 – 18.52b (Tukey = 3.53). G2 (ZIR+CoJet) presented the highest bond strength when compared to the other three groups. G4 showed higher bond strength than G3. All mode of failure were in the adhesive zone. The silica coating on the ceramic surface increased the bond strength between ceramic and resin cement. (Fapesp: Process # 2001/13978-1)

**22- Evaluation of the fracture and fatigue in dry and wet environments of the In Ceram ceramic luted with cements. REGES, R. V., CORRER-SOBRINHO, L., SINHORETI, M.A.C., CONSANI, S., BORGES, G.A. Odontologia Restauradora – Materiais Dentários - FOP/UNICAMP**

The aim of this study was to evaluate the influence of fracture and fatigue strength of In Ceram ceramic in both wet and dry environments, luted with glass ionomer cement (Vitremer) and resin cement (Variolink II). Sixty crowns with 8.0 mm in diameter and 8.5 mm height were fabricated with In Ceram ceramic. Thirty crowns were luted onto bovine teeth with Vitremer and 30 with Variolink II and stored in distilled water at 37° C for 24 hours. For each cement, 10 specimens were tested for fracture strength without fatiguing in an Instron at a crosshead speed of 1.0 mm per minute; 10 were submitted to fatigue for 60,000 cycles with 2 Hz in dry and 10 in wet environment and then fractured. The results were statistically analyzed using ANOVA and Tukey´s test (5%) and showed that the fracture and fatigue strength in dry and wet environments of the crowns luted with Variolink II (1,527 N; 1,110 N and 842 N) were significantly stronger than luted with Vitremer (1,182 N; 926 N and 709 N). The strength of the In Ceram luted with Variolink II and Vitremer decreased significantly after fatiguing in both dry (1,110 N and 926 N) and wet (842 N and 709N). The crowns In Ceram luted with Variolink II showed fracture and fatigue strength stronger than luted with Vitremer. The fatigue in both dry and wet environment decreased the final fracture strength in the crowns luted with two cements.

**23- Effect of surface treatment and exposure to corrosive environment on the flexural strength of dental porcelain. REIS, E. M.*; JANSEN, W. C.*; PEREIRA, M. M.**; GIOVANI, R.*.(*Dentistry School of Federal University of Minas Gerais, Brazil; **Engineering School of Federal University of Minas Gerais, Brazil).**

The present study aimed to assess the flexural strength of the porcelain Duceram Plus ® (Degussa GmbH & Co., Germany), through variation of surface treatment and exposure or not to corrosive environment. Fifty six samples with standardized dimensions were fabricated on refractory boxes and, after being ground with 120 and 220-grit SiC paper, they were randomly divided into four groups according to the surface treatment. Group 1 remained only ground, as previously described. Group 2 was submitted to natural glazing by heating the specimen to the glazing temperature, prescribed by the manufacturer. The samples from group 3 were submitted to overglazing using the porcelain Duceram Plus Glaze Material ®. Samples from group 4 were polished using silicon rubber and diamond paste of 3 and 6mm grit. Half of the specimens in each group, out of 28, were stored for 16h at 80ºC in a 4% acetic acid solution, in accordance with ISO 6872. The surface treatments showed to be significantly different, according to analysis of variance (ANOVA), regardless of exposure to corrosive solution. Tukey's test, performed at a significance level of 5%, showed that the samples not submitted to corrosion, overglazing and polishing provided an increased strength in relation to the other groups, which were ground and naturally glazed. In the samples submitted to corrosion, overglazing showed a higher strength than polishing, although both of them did not show significant differences when compared to the other groups. Student's t test, applied to independent samples, showed that glazed and overglazed porcelains did not have their strengths altered due to corrosion effects. Corrosion showed to diminish strength of samples submitted to polishing and enhanced strength of the samples submitted to grinding.

**24- Effect of photoactivation methods and base materials on the stress generated by composite shrinkage. CUNHA, L.G.; ALONSO, R.C.B.; SINHORETI, M.A.C.; CORRER SOBRINHO, L.; CONSANI, S. (Dental School of Piracicaba, UNICAMP, Piracicaba, SP, Brazil)**

The aim of this study was to evaluate the effect of different photoactivation methods and base materials on the tension generated by the polymerization shrinkage of composites. The evaluated groups for the base material were: (G1) one coat of adhesive agent; (G2) 3 coats of adhesive, and (G3) flowable composite used as a liner. The groups were divided according to the photoactivation method: Continuous light (CL); Stepped Light (SL); Intermittent Light (IL); LED and Xenon Plasma Arc (XP). The generated tension was measured for all groups in a universal testing machine (Instron) five minutes after the end of the photoactivation. A total of 10 samples were confectioned for each group. The results were submitted to ANOVA and the average values compared by Tukey test (á = 0.05). For G1 group, the medium values varied between 1.62 MPa (XP) to 2.22 MPa (CL), where the XP method presented statistically inferior values than the other appraised methods in this group. The values found for G2 and G3 varied of 1.64 MPa (LED) to 2.15 MPa (CL) and 1.24 MPa (IL) to 1.92 MPa (SL), respectively, and the methods LED and IL presented statistically inferior values when compared to the method CL for G2 and CL and SL for G3. The use of base materials was efficient in reducing the tension generated by the polymerization shrinkage of restoring composites when LED or Intermittent light photoactivation methods were used.

**25- Effects of light-curing unit tip angulations variation on dental composite polymerization depth. CORRER, A. B.; TANGO, R. N.; CORRER SOBRINHO, L.; CONSANI, S.; SINHORETI, M.A.C. (FOP, UNICAMP, Piracicaba, S.P.).**

This study examined the polymerization depth of P60 (3M/ESPE) composite by using different light-curing unit tip angulations for polymerization. Twenty-eight bovine incisors were embedded in self-curing acrylic resin, with the facial surface exposed, in which cylindrical cavities with 8 mm deep x 3 mm diameter were prepared. The teeth were divided into 4 groups according to light-curing unit tip angulations (90º, 100º, 110º and 120º). The composite was bulk inserted and light-cured for 20 seconds with the XL2500 (3M/ESPE) unit. The specimens were stored in an incubator at 37°C for 24 hours after light-curing. Then, they were longitudinally sectioned and composite not cured was removed with an excavator. The polymerization depth measurements were determined with a caliper. The data were subjected to ANOVA and Tukey's test ($p<0.05$). The polymerization depth means for 90º, 100º, 110º and 120º angulations were, respectively: 6.73 mm; 6.42 mm; 6.19 mm and 6.09 mm. There were statistically significant differences only among the specimens light-cured with 90º angulation and those light-cured with 100º, 110º and 120º angulations. There were not statistically significant differences among the specimens light-cured with 100º angulations and those with 90º, 110º and 120º angulations. The variation of light-curing unit tip angulations can significantly influence the polymerization depth of P60 composite.

**26- Influence of specimen configuration on polymerization contraction stress test**
**WITZEL, M. F.; BRAGA, R. R.; BALLESTER, R. Y.**
**Dept. of Dental Materials, School of Dentistry, University of São Paulo, Brazil**

The aim of this study was verify the influence of height and diameter of specimens on the stress developed during the polymerization shrinkage of a self-cure composite (Adaptic, Dentsply). Glass rods with 2.5 or 5 mm in diameter had one of the ends sandblasted with alumina, silanated and coated with a layer of adhesive (Scothbond MP, 3M ESPE), light-cured for 30s. The rods were attached to the testing machine clamps (Instron 5565) and different heights for the composite specimen were defined varying the distance between them (0.63, 0.83, 1.25 and 2.5mm). An extensometer was used to keep the specimen height constant. The test was conducted at 37ºC. The maximum stress value after 30min was registered (n=3) and data were analyzed by ANOVA/Tukey's test (a=0,05). The interaction between factors was significant ($p<0.001$). The averages (MPa) and standard deviations are in the table.

| | Height (mm) | | | |
|---|---|---|---|---|
| | 0.63 | 0.83 | 1.25 | 2.5 |
| Diameter (mm) 2.5 | 2.6 (0.2) b,c | 3.1 (0.2) b,c | 3.5 (0.3) a,b | 3.6 (0.3) a,b |
| 5.0 | 4.7 (0.5) a | 4.4 (0.3) a | 3.9 (0.1) a,b | 2.0 (0.8) c |

Groups with the same bonded-to-unbonded ratio (C=1: d=2.5 x h=0.63mm and 5 x 1.25mm; C=2: 2.5 x 1.25mm and 5 x 2.5mm) showed statistically similar stress values (Student "t"-test, $p>0.05$). It is possible to conclude that contraction stress values are affected by the dimensions of the specimen.

**27- Study on polymerization contraction tension of a resin composite photoactivated for different methods. SINHORETI, M.A.C., CUNHA, L.G., CONSANI, S., CORRER-SOBRINHO, L., DE GOES, M. F. (Piracicaba Dental School- UNICAMP)**

The aim of this study was to evaluate the effect of different photoactivation methods on the tension generated by the polymerization shrinkage in two different moments: immediately after the end of the photoactivation and 5 minutes after the photoactivation. The methods evaluated were: Continuous light (CL); Stepped light (SL); Intermittent light (IL); LED; and Xenon Plasma Arc (XP). The generated tension was measured for all groups in a universal testing machine (Instron) immediately after the end of the photoactivation (FF) and 5 minutes after the end of the photoactivation (5F), through a device incorporated to the load cell of the machine. Ten cylindrical samples were confectioned for each group evaluated. The results were subjected to ANOVA and the average values compared using the Tukey test (á = 0,05). For each method, the results obtained in the moments FF and 5F were, respectively: CL (3,58 and 4,46 MPa); SL (2,99 and 4,36 MPa); IL (3,51 and 4,32 MPa); LED (3,03 and 3,96 MPa); and XP (0,72 and 3,27 MPa). There was no statistical difference among the appraised methods, except for the method XP, which differed from the others in the two periods. For all of the methods there was a statistical significant difference between the periods FF and 5F. The intensity of the tension generated by the polymerization shrinkage during the photoactivation period can be associated with the photoactivation method used. A significant increase in the tension intensity generated by the polymerization shrinkage was verified during the post-photoactivation period up to 5 minutes, for all the methods used.

**28- Degree of conversion in Z250 composite resin by FTIR. Comparison of techniques, periods and photo-activation methods.**
**OBICI, A.C.; SINHORETI, M.A.C.; FROLLINI, E.; CORRER SOBRINHO, L.; CONSANI, S. (Faculdade de Odontologia de Piracicaba, UNICAMP, Piracicaba, SP).**

The aim of this study was to evaluate the degree of conversion (DC) of the Z250 composite resin, using six different photo-activation methods, two periods (24 hours and 20 days), and two preparation techniques of the FTIR specimens (Potassium Bromide [KBr] pellet and thin resin film). For the KBr pellet technique, the composite was placed into metallic mold (6mm in diameter X 2mm in height), and photo-activated as follows: G1-continuous light (800mW/cm$^2$-40s); G2-exponential light (0-800mW/cm$^2$-40s); G3-intermittent light (2s-600mW/cm$^2$; 2s without light-80s); G4-stepped light (10s-150mW/cm$^2$; 30s-650mW/cm$^2$); G5-LED (100mW/cm$^2$-40s); G6-PAC (1320mW/cm$^2$-3s). The specimens were pulverized in a fine powder and pressed with potassium bromide to be analyzed by FTIR. To the uncured material was used a metallic siliceous window. The measurements for this technique were performed in specimens made to 24 hours and 20 days. Approximately 0.07g of the composite was pressed between two polyester strip using two glass slabs, and then, photo-activated by one of the methods above described. After 24 hours, the films were separated of the polyester strip and analyzed into spectrophotometer. For each hypothesis tested were made three specimens. The DC was calculated by standard technique and then submitted to ANOVA and Tukey's test (5%). The results showed that independently of the period and the specimen preparation technique there were no significant difference between photo-activation methods ($p>0.05$). The periods also showed no statistic difference between them ($p>0.05$). However, the KBr pellet technique revealed DC values higher than thin resin films ($p<0.05$). It was concluded that DC values were no statistically affected by different photo-activation methods or analyzed periods. However, the employed specimen preparation technique showed significant differences for DC values of the Z250 composite.

**29- ABSENT**

**30- Relationship between contraction stress and marginal integrity in composite restorations. CALHEIROS, F.C.; SADEK, F.T.; BRAGA, R.R.; CARDOSO, P.E.C. Department of Dental Materials- University of São Paulo, School of Dentistry**

The aim of the present study was to verify the relationship between contraction stress and marginal integrity in composite restorations. The materials tested were Heliomolar (Ivoclar-Vivadent), Z250 (3M ESPE), Aelite LS (BISCO) and InTen-S (Ivoclar-Vivadent). For the contraction stress test (n=5), glass rods (Ø=5mm) were attached to the testing machine after having one of their flat surfaces sandblasted, silanated and coated with unfilled resin (Scotchbond MP, 3M ESPE). The composite was then applied to the glass and the distance between the glass rods was set to 1mm (C-factor =2.5). Contraction force was monitored for 10 min starting at the beginning of photoactivation (850mW/cm$^2$, 30s). For microleakage evaluation, cylindrical cavities (n=10, C-factor=2.5) with enamel margins prepared on the labial surface of bovine incisors were restored in bulk, using the same adhesive (Single Bond, 3M ESPE) for all the composites and the same energy density used in the stress test. After 24h, the specimens were immersed in methylene blue for 4 h and sectioned in two perpendicular planes. Scores were used to evaluate microleakage. Analysis of the data was performed by means of ANOVA (stress), Kruskal-Wallis (microleakage) and Tukey's test (5%).
Results are shown in the Table. Regression analysis revealed a positive linear relationship between the two variables ($R^2$= 0.87). Therefore, it may be concluded that marginal integrity is directly related to the stress generated during composite polymerization.

| Composite | Stress (MPa) | microleakage (mean of ranks) |
|---|---|---|
| Aelite | 9,4 (0,91) $^a$ | 28,2 $^A$ |
| Z 250 | 6,6 (0,78) $^b$ | 20,4 $^{A,B}$ |
| InTen-S | 5,3 (1,06) $^b$ | 22,0 $^{A,B}$ |
| Heliomolar | 3,3 (0,24) $^c$ | 13,2 $^B$ |

**31- Quantitative analysis of marginal leakage of esthetic restorative materials as a function of dentin substrate. SAITO FERNANDES, S.K.; LOVADINO, J.R. (Universidade de Fortaleza, UNIFOR; Faculdade de Odontologia de Piracicaba, UNICAMP).**

The aim of this study was to evaluate quantitatively, by spectrophotometer, the marginal leakage of normal and artificially hipermineralized cervical cavities in dentin restored with different esthetics materials. One hundred eight cavities were prepared in root bovine teeth and divided in two experimental groups (normal and hipermineralized), then subdivided in four groups: Vidrion R caps, Vitremer, Single Bond and Clearfil SE Bond. Three mineralizing solutions were applied to dentin treatment after cavities preparation to obtain hipermineralized dentin substrate. The restorative materials were placed in hipermineralized dentin ( Groups I, III, V and VII) and normal dentin (Groups II, IV,VI and VIII). The restored teeth were subjected to 1000 thermal cycles between 5±2 $^0$C and 55±2 $^0$C, then immersed in 2% methylene blue solution for 24 hours. The marginal leakage was determined and expressed by dye concentration (mg/ml). The data were analyzed by the Kruskal-Wallis test. There was no statistically significant difference between the evaluated substrates, however, there was significant difference among materials ($p<0,01$). The mean values were (mg/ml): GI- 55,9a; G-II 64,3a; G-III 12,1b; G-IV 21,2b; G-V 32,9bc; G-VI 30,1bc; G-VII 41,9cd; G-VIII 37,7cd. Microleakage of Vidrion R caps material was greater than that of the other materials. The Vitremer material presented the same marginal leakage values that Single Bond/Filtek Z250. The latter did not differ from Clearfil SE Bond system.

**32- Effect of the polymerization technology and of the use of resin liners on marginal adaptation of composite restorations. ALONSO,R.C.B.; CUNHA, L.G.; SINHORETI, M.A.C.; DE GOES, M.F. Materiais Dentários – FOP/UNICAMP Piracicaba – SP.**

The purpose of this study was to evaluate the effect of the polymerization technology and of the use of resin liners on marginal adaptation of composite restorations. A hundred twenty bovine incisors were selected and the buccal surfaces were grounded until dentin was exposed. A circular cavity (4mm x 1.5mm) was prepared in this area and Scotchbond MP system was applied according to the manufacturer's instructions. These teeth were assigned into 3 groups, according to the polymerization method: 1-Halogen (H)- 20s 800mW/cm²; 2-LED- 40s 370mW/cm²; 3-Plasm arc xenon (X)- 3s 1800mW/cm². Each group was subdivided into 4 subgroups, according to the liner used: A- 1 adhesive layer (1L); B-3 adhesive layers (3L); C- Filtek Flow(FF); D- Protect Liner(PL). All cavities were restored with Filtek Z250 and polished. Then, Caries Detector was applied for the verification of marginal adaptation. These images were observed under stereomicroscope and converted in gap values (g%). Data were submitted to ANOVA and Tukey's test ($p<0,05$). Results did not show statistic differences in the gap values using the different polymerization technologies in the groups 1L, 3L, and PL. The use of FF has increased marginal quality for H(29%) when compared with LED(50%) and X(37%). Regarding group H, the 3 resin liner restorative techniques (3L-35%, FF-29%, PL-36%) have increased marginal adaptation when compared with 1L(56%). The polymerization technology effects on marginal adaptation depends on the restorative technique employed. The use of resin liners with halogen light decreases marginal gap formation.

**33- Effects of the polymerization methods and of the use of resin liners on marginal adaptation of composite restorations. BRUSCHI-ALONSO, R.C.; ALONSO, R.C.B.; CUNHA, L.G.; SINHORETI, M.A.C.; DE GOES, M.F. Materiais Dentários – FOP/UNICAMP Piracicaba – SP.**

The purpose of this study was to evaluate the effect of the polymerization methods and of the use of resin liners on marginal adaptation of composite restorations. A hundred twenty bovine incisors were selected and the buccal surfaces were grounded until dentin was exposed. A circular cavity (4mm x 1.5mm) was prepared in this area and Scotchbond Multi Purpose system was applied according to the manufacturer's instructions. These teeth were assigned into three groups, according to the polymerization method: 1-Continuous light (CL)- 20s 800mW/cm²; 2-Soft start (SS)- 10s 150mW/cm² + 15s 800mW/cm²; 3-Pulsating light (PU)- 2s on and 2s off- 40s 600mW/cm². Each group was subdivided into four subgroups, according to the liner used: A- 1 adhesive layer (1L); B-3 adhesive layers (3L); C- Filtek Flow (FF); D- Protect Liner (PL). All cavities were restored with Filtek Z250 and polished. Then, Caries Detector was applied for the verification of marginal adaptation. These images were observed under stereomicroscope and converted in gap values (gap%). Data were submitted to ANOVA and Tukey's test ($p<0,05$). Results showed that PU decreased the gap values (24%) when it was compared with CL (66%) and SS (63%), only for 1L group. Considering the liners, FF (33%) decreased the gap values when it was compared with 1L (63%) and 3L and PL showed intermediate values (36% for both).
The pulsating light method significantly improved marginal adaptation when the traditional restorative technique was used and the FF method as a liner decreased marginal gap formation when continuous light was used

**34- Effect of sodium hypochorite on the shear bond strength in primary teeth. CORRER, G.M.; PUPPIN-RONTANI, R.M.; CALDO-TEIXEIRA, A.S.; SINHORETI, M.A.C.; CORRER-SOBRINHO, L.; CONSANI, S. (FOP–UNICAMP, Piracicaba - SP).**

The aim of this study was to evaluate the effect of sodium hypochlorite (NaOCl) on the shear bond strength (SBS) using three bonding agents (Single Bond- SB, Prime & Bond 2.1- PB, and Clearfil SE Bond- CSE), in primary dentin. Forty-five sound extracted primary molars were selected. The crowns were longitudinally sectioned, embedded in polystyrene resin, and flattened until reach a dentin surface. Then, the samples were randomly assigned into 6 groups (n=15): G1-SB; G2-NaOCl+SB; G3-PB; G4-NaOCl+PB; G5-CSE and G6-NaOCl+CSE. All the adhesive systems were applied according to manufacturer's instructions, except for the application of 10% NaOCl solution for 60s in groups 2, 4 (after acid etching), and 6 (before adhesive system). Next, the composite resin was inserted in increments (2mm) in a vinyl polysiloxane matrix and light cured for 20s. The samples were stored in distilled water at 37°C for 24h and then, submitted to SBS test (Instron) with a crosshead speed of 0.5mm/min. The failure sites were observed in SEM. The data were submitted to ANOVA and Tukey´s tests (a=0.05). The values in MPa were: G1-13.17±1.97; G2-12.93±1.36; G3-12.04±0.27; G4-11.91±0.74; G5-12.67±1.22; G6-12.14±1.10. According to the results, there was no statistical significant difference among the groups with or without treatment of the substrate, regardless the material used. There was a statistical significant difference among the materials (SB$^3$CSE$^3$PB). It could be concluded that dentin surface treatment with sodium hypochlorite did not affect the resin/dentin bonding strength in primary teeth.

**35- Effects of HEMA/solvent mixtures on bond strength to dry dentin. GARCIA, F.C.P.; MARQUEZINI JR., L.;PASHLEY, D.H.;CARVALHO, R.M[1]. [1]Department of Operative Dentistry, Endodontics and Dental Materials, Bauru School of Dentistry, University of São Paulo, Bauru, SP, Brazil; [2]Department of Oral Biology, School of Dentistry, Medical College of Georgia, Augusta, Georgia**

Improved bond strengths to etched and dried dentin may be possible if primers or adhesives are capable of re-expanding the collapsed matrix during bonding. Some solvents are capable of re-expanding the dried collapsed dentin matrix. This study tested the null hypothesis that there is no effect of solvent type from HEMA/solvent mixtures on the bond strengths to etched and dried dentin. Twenty-seven extracted human third molars had their mid-coronal dentine exposed flat and polished with a 600-grit SiC paper. The surfaces were etched with 35% phosphoric acid for 20 sec, air-dried for 30 sec and primed with 35%HEMA/65% methanol, ethanol or acetone (v/v). The primed surfaces were left undisturbed for 30 sec, gently air-dried with air for 30 sec and bonded with 4-META-TBBO adhesive. Composite buildups were constructed incrementally with Z 100 (3M/ESPE) resin composite. Each increment was cured for 40 sec. After storage in water for 1 day at 37°C, they were prepared for microtensile bond strength testing with a cross-sectional area of approximately 0.8 mm². They were then tested in tension in a Vitrodyne V 1000 testing machine at 0.6 mm/min. Data were analyzed by ANOVA and Student-Newman-Keuls at a=0.05.Values are MPa ± SD (N).The higher bond strengths were obtained with solvents capable of re-expanding the dehydrated matrix. Bond strengths were dependent on the type of solvent in HEMA/solvent primers. FAPESP 01/06140-1, 01/06472-4, 02/06682-1, CNPq 300481/95-0, 474226/03-4.

| Primers | Bond Strength (MPa) |
|---|---|
| HEMA/Methanol | 43.4 ± 18.5(44)a |
| HEMA/Ethanol | 36 ± 13.8(35)b |
| HEMA/Acetone | 21.7± 9.4(37)c |

**36- One-bottle versus self-etching adhesive systems: microtensile and SEM evaluations. SADEK, F.T. ; CARDOSO, P.E.C.- Faculdade de Odontologia da Universidade de São Paulo – Departamento de Materiais Dentários**

The aim of this study was to evaluate the bond strength to dentin, using microtensile test and observing the penetration/impregnation using SEM, of 6 adhesive systems. The occlusal third of 36 human molars were cut off, obtaining a flat dentin surface. After creating a standard smear layer, teeth were divided into 6 groups (n=6), according to the adhesive system to be used: One Step Plus [OS]; Tyrian SPE + One Step Plus [TY] (BISCO, Inc.); Optibond Solo Plus [OP]; Optibond Solo Plus self-etching [SS] (Kerr), Clearfil SE Bond [SE] (Kuraray Medical Inc.) e Xeno III [XE] (Caulk-Dentsply). A resin composite block (Tetric Ceram – Ivoclar/Vivadent), 5 mm high, was built on the occlusal direction. After 24 hours storage in distilled water at 37ºC, five (5) teeth from each group were randomly chosen for microtensile evaluation, and were cut to obtain stick shaped samples, with a bond area of approximately 0,8 mm². The remaining tooth from each group was demineralized in HCl and prepared for SEM analysis. The pictures obtained for the adhesive systems [OS], [OP], [SS] e [SE] showed uniform resin tags all along the dentin area, pictures of [TY] and [XE] show an absence of penetration in some areas, as well as tag fractures. The mean values of bond strength, in MPa, and the standard deviation values obtained were:

| Adhesive system | [OS] | [TY] | [OP] | [SS] | [SE] | [XE] |
|---|---|---|---|---|---|---|
| Bond strength | 39,4$^b$(+5,87) | 27,5$^c$(+3,78) | 39,5$^b$(+4,03) | 55,8$^a$(+9,20) | 44,9$^{a,b}$(+6,06) | 26,5$^c$(+6,00) |

When compared to one-bottle, the self-etching adhesive systems presented a considerable difference regarding bond strength, both in SEM evaluation and bond strength test. There seems to be a strong relation between the bond strength and the quantity and quality of the tags observed in SEM.

**37- Effect of phosphoric acid etching on bond strength to caries-affected dentin. ARRAIS, C.A.G.; GIANNINI, M.; NAKAJIMA, M.; TAGAMI, J. (Piracicaba Dental School, UNICAMP, Piracicaba, SP)**

The purpose of this study was to evaluate the effect of additional etching on bond strengths (mTBS) to caries-affected dentin (CAD). Thirty-six third molars with CAD were randomly assigned to eight experimental groups. The occlusal surface was ground perpendicular to the long axis of the tooth in order to expose either CAD or normal dentin (ND). Self-etching Clearfil SE Bond/Kuraray (CF) was applied according to manufacturer's instruction either on CAD (G1) or on ND (G2), and after etching with 35% $H_3PO_4$ for 15 seconds before applying the adhesive system on both CAD (G3) and ND (G4). Single Bond (SB) was applied according to manufacturer's instructions on both CAD (G5) and ND (G6) and the dentin surfaces were also etched with 35% $H_3PO_4$ for 45 seconds before applying the adhesive system on either CAD (G7) or ND (G8). A composite "crown" was incrementally built on each surface and the samples were vertically, buccal-lingually sectioned, resulting in bonded slabs, which were trimmed to an hourglass shape with a cross-sectional area of approximately 0.8mm². One slab of CAD and another of ND from each tooth (n = 9) were tested in tension at a crosshead speed of 0.5mm/min. Results were statistically analyzed by three-way ANOVA and Tukey test. The mean results of mTBS (MPa + SD) for G2 (41.82+10.05), G4 (45.97+7.52), G6 (47.99+13.65) and G8 (41.13+10.84) were not significantly different among them, but they were always higher than those observed on CAD. G3 (30.76+8.16) and G7 (31.83+10.06) presented significantly higher bond strengths than those observed for G1 (20.54+8.82) and G5 (23.58+9.18). Different etching times promoted higher bond strength for both adhesive systems applied on CAD; however, bond strengths on CAD were still lower than those obtained on ND.

**38- Effect of smear layer thickness and pH of self-etching adhesive systems on the bond quality to dentin.**
**KENSHIMA, S. ; UCEDA-GOMES, N.; TANCREDO, L.L.F.; FRANCCI, C. , RODRIGUES FILHO, L.E.; REIS, A.; LOGUERCIO, A.D. Dental Materials Department - FOUSP e UNOESC – JOAÇABA/SC**

The objective of this study was to evaluate the influence of 2 smear layer thicknesses on bond strength (BS) and the mean gap width at the interface (GW) of different acidity self-etching adhesive systems. After dentin exposure, each of the 30 molars (n=5) was sectioned in two: a 60-grit SiC paper surface (thick smear layer) was prepared in one half and a 600-grit (thin smear layer) in the other. They were restored with one of the following adhesive systems: Clearfil SE Bond (pH>2 - mild), Optibond SOlo primer and bond (1 < pH < 2 - moderate), TYrian + One Step Plus (pH<1 - aggressive) and, as control groups, Single-Bond (SB) and ScotchBond Multi-Purpose (MP). The adhesives were applied (600 mW/cm²) and a "crown" was made with Z-250 (3x-30s/increment). After a 24-hour storage ($H_2O$ 37ºC), the teeth were sectioned in slabs with a 0,8 mm² cross-section area for microtensile test (Kratos – 0.5 mm/min). Previously, the GW was measured by optic microscopy (400x). Data was analyzed by a 2-way ANOVA: Adhesive and Smear layer thickness as main factors for BS and GW (p=0.05). A Pearson's correlation test was also applied (p=0.05). Only Adhesive was significant (table below) and no correlation was found.

| | SE | SO | TY | SB | MP |
|---|---|---|---|---|---|
| BS (MPa) | 40,5 ± 12$^{a}$ | 36,1 ± 10$^{a,b}$ | 24,1 ± 10$^{b}$ | 26,5 ± 14$^{b}$ | 42,5 ± 11$^{b}$ |
| GW (µm) | 4,1 ± 1,9$^{k}$ | 2,7 ± 1,4$^{y}$ | 1,6 ± 0,5$^{yw}$ | 0,8 ± 0,4$^{w}$ | 0,78 ± 0,3$^{w}$ |

It was concluded that under the experimental conditions, there was no influence of the smear layer thickness, but, both the BS and the GW were affected by the acidity of the self-etching systems. Approved by the Ethics Comitee (FOUSP). Grants:CNPq 350085/2003-0 and CAPES.

**39- Tensile bond strength of resin cement on dentin and resin coated dentin at 10 minutes, 24 hours and 12 months after curing. DUARTE R.M., DE GOES, M.F. (Faculdade de Odontologia de Piracicaba-UNICAMP)**

The purpose of this study was to evaluate the tensile bond strength of Panavia F (PF) resin cement on dentin and resin coated dentin. Flat dentin surfaces were prepared on labial surface of 60 bovine teeth and a 4.0-mm-diameter bonding area was demarcated with adhesive vinyl tape. On the dentin surface of the A I, A II and A III Groups were applied ED Primer and in the B I, B II and B III Groups were applied Clearfil Liner Bond 2V followed by Protect Liner F (PLF) and PF. A resin composite rod was positioned on the bonding area and cured for 20s at the three points of the interface to perform the TBS test using an Instron machine (0.5 mm/min) at 10 minute to AI and BI, 24h after curing to AII and BII and after 12 months storage to A III and B III. The results were analyzed by ANOVA and Tukey's test (p< 0.05). Fracture modes were observed at SEM. The TBS results in MPa were: A I – 9.32 ± 2.39; A II – 10.16 ± 1.22; A III – 8.47± 1.52; B I – 10.58 ± 2.19; B II – 11.31 ± 2.06; B III – 9.74 ± 1.61. There was no statistically significant difference among the groups at 10 minutes and 24 h. A III and B III showed the lowest TBS after 12 months storage. PF resin cement on resin coated dentin (PLF) showed the highest TBS and was statistically different than PF on dentin. The fracture pattern was cohesive on the adhesive/hybrid layer for A I, A II and A III and cohesive on composite resin for B I, B II and B III. The concept of coating the prepared dentin with low viscosity composite resin showed a protection with a dentin seal during storage.

**40- Influence of storage time in distilled water on the tensile bond strength between IPS Empress 2 and cement. SALVIO, L.A.; CORRER-SOBRINHO, L.; SINHORETI, M.A.C.; CONSANI, S. - School of Dentistry of Piracicaba - UNICAMP**

The aim of this study was to evaluate the effect of water storage (24 hours and 1 year) on the tensile bond strength between the IPS Empress 2 ceramic and material for fixation Variolink II under surface acid etching with 10% hydrofluoric acid and pattern of failure. Thirty disks with 5.5 mm in diameter and 2,5 mm thick were fabricated with IPS Empress 2 ceramic and acid etching with 10% hydrofluoric acid for 20 seconds. After, silane was applied on treated ceramic surfaces and the disks were bonded into pairs with Heliobond adhesive and Variolink II resin cement. Afterwards, 15 specimens were stored in distilled water at 37ºC for 24 hours and 15 for 1 year. After, the storage time were submitted to a tensile strength test in a Instron machine at a cross-head speed of 1.0 mm/min.. The pattern of failure was examined with a light microscope at x 20 magnification. The results were statistically analyzed using ANOVA and Tukey's test (5%) and showed that the values of the bond strength for storage time 24 hours (15.54 MPa) was significantly stronger than storage time 1 year (9.10 MPa). The pattern of failure was mixed (12) for 24 hours and (11)for 1 year storage. The storage conditions decreased significantly the tensile bond strength and the failure was mixed for the two storage time.
Financial support: CAPES

**41- Effects of pre-etching on bond strength durability of two self-etching adhesives to dentin. MARQUEZINI JR., L.[1]; GARCIA, F.C.P.[1], PEREIRA, L.C.G[2]; TAY, F.R.[3]; PASHLEY, D.H.[4]; CARVALHO, R.M. [1] [1] Bauru School of Dentistry, University of São Paulo, Bauru, SP, Brazil; [2]Anapolis Dental School, Anapolis, Brazil; [3]University of Hong Kong, Hong Kong, China; [4]Medical College of Georgia, Augusta, Georgia, USA**

This study evaluated the effects of pre-etching dentin with phosphoric acid (PA) on the bond strength of One Up Bond F (OUB, Tokuyama, Japan) and Clearfil SE Bond (CSE, Kuraray, Japan). Occlusal flat dentin surfaces were obtained by wet-grinding third molar crowns with 600 grit SiC paper. Both adhesives were applied according to recommendations (20s, passively, control group) or after etching the surface with 35% PA for 10s (experimental group). Resin composite buildups were constructed incrementally up to 5 mm and the bonded teeth were stored in water for 24 hours at 37°C. They were then serially sectioned to generate bonded beams of approximately 1mm² that were tested with the microtensile method at 0,5 mm/min. Tests were conducted after 24hr of water immersion or after 6 months of either water or oil storage. Values are MPa±SD(n).

| Material | 24H | 6M Water | 6M Oil |
|---|---|---|---|
| OUB Control | 32,1±8,5(12)cB | 17,6±5,4(12)bA | 73,2±14,1(10)aA |
| OUB Experimental | 23,3±5,9(17)cA | 13,8±4,7(15)bA | 60,0±15,4(13)aA |
| CSE Control | 34,7±9,0(12)bB | 43,7±13,0(13)bB | 61,9±23,8(11)aA |
| CSE Experimental | 44,8±15,9(9)bB | 39,8±12,2(12)bB | 65,1±21,8(15)aA |

Multiple-way ANOVA showed significant decrease of the bond strength after 6 months water storage for OUB experimental and control groups (p<0.05). Water storage for 6 months caused no significant effect on the bond strength of CSE adhesive, regardless of bonding technique (p>0.05). Higher bond strengths were found when the specimens were stored in oil for both systems. Pre-etching with phosphoric acid did not improve the durability of bond strengths of self-etching systems to dentin. The effects of storage media were material dependent. (Supported by FAPESP 01/06472-4, 02/06682-1, CNPq 300481/95-0, 474226/03-4 and NIDCR DE 014911).

**42- Effect of storage media on mechanical properties of the resin-dentin bond components. CARRILHO, M.R.O.[1]; CARVALHO, R.M.[2]; TAY, F.R.[3]; PASHLEY, D.H.[4]. (1-FOP-UNICAMP, Piracicaba; 2- FOB-USP, Bauru; 3-University of Hong Kong, China; 4-Medical College of Georgia, Augusta.**

Recent studies have demonstrated that resin-dentin bonds created by current simplified adhesive systems can degrade over time. The stability of such bonds might be intrinsically limited by the stability of their own components. The aim of this study was to evaluate the effects of long-term storage on the true stress (TS) and modulus of elasticity (E) of isolated components of resin-dentin bonds. Resin composite (Z250) and adhesive systems (Single Bond- SB; One-Step- OS and Clearfil Liner Bond 2V- CL) specimens were prepared from customized molds and dentin specimens were prepared from mid-coronal dentin discs from extracted human third molars. Part of the dentin specimens was demineralized for 6 days in 0.5 mol/L EDTA (pH 7.0). The dentin and resin-based substrates were shaped into either hourglass or I-beam specimens that were used to determine TS and E, respectively. Control specimens of each substrate were subjected to tensile testing at 0.6 mm/min after 24 hours of immersion in distilled water. Experimental specimens were stored at 37ºC in either distilled water or mineral oil and tested after 12 months. The data were independently analyzed by ANOVA and Tukey's test. Both TS and E of all resin-based substrates decreased significantly after 1 year storage in water (p<0.05), except the TS of SB (p>0.05). No effects of storage were observed for mineralized dentin (p>0.05). Water storage caused no significant changes in the TS and E of demineralized dentin (p>0.05), however, both properties decreased significantly after oil storage (p<0.05). The TS and E of the components of resin-dentin bonds were dependent on the storage time and medium. Supported by FAPESP # 99/10043-0, 02/06682-1; CNPq # 300481/95-0, 474226/03-4 and NIDCR DE 014911.

**43- Evaporation rate of HEMA/solvent mixtures from free and dentin surfaces.**
**WANG, L.[1]; GARCIA, F.C.P.[1]; PEREIRA, L.C.G.[1]; PASHLEY,. E. L[2];PASHLEY, D. H.[2]; CARVALHO, R.M. [1]; LAURIS, J.R.P. [1]Department of Operative Dentistry, Endodontics and Dental Materials, Bauru School of Dentistry, University of São Paulo, Bauru, SP, Brazil; [2]Department of Oral Biology, School of Dentistry, Medical College of Georgia, Augusta, Georgia, USA**

The aim of this research was to test two null hypothesis: 1) there are no influence of solvent type on the evaporation rate of HEMA/solvent mixtures; 2) there are no differences between the total evaporation of HEMA/ solvent mixtures from free surfaces or from demineralized dentin cubes. Primers were prepared by mixing 35% HEMA with 65% water, methanol, ethanol or acetone (v/v). Free evaporation of standard aliquots (50 µL) of each primer were determined by monitoring the weight loss in a digital balance over 600 sec on free surface. Dentin cubes (2 x 2 x 2 mm) (n=5) were prepared from mid coronal dentin of extracted human third molars and demineralized in 0.5 M EDTA for 7 days. The dentin cubes were immersed in the primers to saturation. They were wiped with tissue paper and the weight loss monitored over 600 sec with a digital balance. Data were analyzed by two-way ANOVA and Student-Newman-Keuls at a=0.05.

| | Rate (%/ min) | | Total weight loss (%) | |
|---|---|---|---|---|
| HEMA/ solvent | Free | Dentin | Free | Dentin |
| HEMA/ water | 1.87 ± 0.33 a | 1.24 ± 0.11 e | 18.70 ± 3.34 aA | 19.86 ± 3.16 eA |
| HEMA/ ethanol | 5.05 ± 0.75 b | 1.27 ± 0.25 e | 50.50 ± 7.55 bB | 30.87 ± 7.38 fC |
| HEMA/ methanol | 3.74 ± 0.26 c | 1.35 ± 0.12 e | 39.32 ± 2.80 cD | 38.16 ± 3.66 gD |
| HEMA/ acetone | 2.99 ± 0.41 d | 1.12 ± 0.15 e | 29. 97 ± 4.11 dE | 31.11± 20.11 fE |

Evaporation was faster from free than from dentin surfaces for all mixtures ($p<0.05$) and was dependent on the solvent. FAPESP 01/06140-1, 02/06682-1 e CNPq 300481/95-0, 474226/03-4.

**44- A long-term SEM(BSE)/TEM ultramorphological analysis of the resin-dentin bond: nanoleakage of contemporary adhesives.**
**REIS, A.F.[1]; ARRAIS, C.A.G.[1]; NOVAES, P.D.[1]; CARVALHO, R.M[2]; GIANNINI, M.[1] ([1]FOP-UNICAMP, [2]FOB-USP)**

This study evaluated nanoleakage in bonded restorations using two two-step self-etching primers (Clearfil SE Bond, CF and Unifil Bond, UB), two single-step self-etching adhesives (Adper Prompt, AD and One-up Bond F, OB) and one that requires previous etching (Single Bond, SB). Flat dentin surfaces were bonded and stored in water for 1 week or 6 months. After storage periods, teeth were sectioned into 0.8 mm thick slabs, coated with nail varnish except for the bonded interfaces, and immersed in 50% ammoniacal $AgNO_3$ for 24 h. After immersion in a developing solution for 8 h, specimens were observed under a scanning electron microscope (SEM) using the backscattered electron mode (BSE). Undemineralized, unstained, epoxy resin-embedded sections were prepared for transmission electron microscopy (TEM). Nanoleakage patterns were observed in all bonded specimens. CF and UB presented the lowest nanoleakege patterns and a remarkable stability over the experiment. SB presented accumulation of silver particles within the hybrid layer (HL), which was intensified after 6 months. AD and OB presented silver accumulation within the HL and in the adhesive as well, with an increased leakage pattern after 6 months. The quality of the HL produced by the different bonding systems did not prevent nanoleakage at the bonded interface, which remarkably increased after 6 months for the self-etching adhesives AD and OB, and for SB.
Supported by CAPES and FAPESP#01/13034-3

**45- Comparative analysis of etching pattern of self-etching primer systems on intact and ground enamel surface.**
**SHINOHARA, M.S.; OLIVEIRA, M.T.; HIPÓLITO, V.; RUEGGEBERG,F.A.;GIANNINI, M.; DE GOES, M.F. (Faculdade de Odontologia de Piracicaba – UNICAMP).**

The aim of this study was to analyze the etching pattern (EP) of 5 self-etching primer systems in comparison to 35% phosphoric acid etching (FA) for 15s of a conventional one-bottle adhesive system on intact (I) and on grounded (G) enamel surface. Ten human third molars were used. The teeth were sectioned in directions mesial-distal and buccal-lingual, and from each tooth were obtained 4 fragments. Half of the fragments were ground using 600-grit SiC paper and the other half remained intact. The specimens were randomly assigned into 6 groups, according to the adhesive system (AS): Single Bond/3M [SB]; Xeno/Dentsply [XE]; Tyrian/Bisco [TY]; OptiBond Solo Plus/Kerr [OPS]; One-up Bond F/Tokuyama [OUB]; Unifil Bond/ GC [UN]. The components of AS were applied to I and G enamel surfaces, according to the manufacturer's instructions. Subsequently, the treated surfaces were submitted to alternate rinsing with alcohol and acetone (10s each bath), and maintained for 12h in dehydrated silica gel. The samples were sputter-coated with a film of gold for observation under the SEM (Jeol-5600LV). The EP of FA was deeper and more homogeneous in comparison to EP of self-etching primer AS, for both enamel surfaces I and G. The active acidic monomers of self-etching primer AS showed more effective on G enamel, except to the UN. The TY and OPS systems demonstrated an EP greater and more homogeneous than the OUB and the XE. The EP of self-etching primer AS was clearly less deep and homogeneous than the FA, for both intact and grounded enamel surfaces. Support: Capes and Fapesp #01/13034-3

**46- The use of potassium oxalate solutions to reduce the permeability of dentin and adhesives.**
**SILVA, S.M.A.; TAY, F.R.; PASHLEY, D.H.; CARVALHO, R.M.
(Bauru School of Dentistry USP- Brazil, University of Hong Kong- China, Medical College of Georgia- USA)**

Dental adhesives are indispensable materials in any procedure in current adhesive dentistry, because they provide retention and sealing of the exposed dentin. However, adhesive resins have been shown to function as permeable membranes that allow fluids to diffuse across its structure, even after polymerization. The fluids come from the adjacent dentin and reach the interface through the outward movement along the dentinal tubules. This phenomenon is particularly evident with conventional adhesives, because the previous etching opens the dentine tubules and increase transdentinal permeability . The phenomena related with adhesive permeability have important implications in clinical situations, since they may compromise co-polymerization of the adhesive with the resin composite applied on the cavity, and contribute for its degradation over time. Potassium oxalate solutions are effective in reducing the hydraulic conductance of dentin with exposed tubules. They react with calcium ions from dentin to form insoluble calcium oxalate crystals. When these solutions are used after acid-etching, crystals are formed inside the dentinal tubules. In this case, they do not interfere with subsequent resin infiltration and bonding and reduce the dentinal fluids that could reach the adhesive layer.
This study demonstrates by simple experiments the phenomena and mechanisms involved on the permeability of the adhesives and the influence of the oxalate solutions.
Supported by CNPQ 300481/ 95-0, 474226/03-4, FAPESP e NIDCR DE 014911

**47- Analysis of alternative enamel and dentin human tooth model for Radiopacity experiments of the dental structure and restorative procedures.**
**FONSECA, R.B.; SILVA, G.R.; SOARES, C.J.; HAITER NETO, F.; FERNANDES NETO, A.J.; SOARES, P.V. School of Dentistry/UFU.**

The radiopacity is an important property of the tooth structure and dental materials. The analysis of this characteristic is carried out with human tooth, however, collect such teeth is very difficulty. Therefore, the purpose of this study was to evaluate the radiopacity of enamel and dentin of human, bovine and swine teeth. Ten recently extracted, sound human molars, ten bovine incisors and ten swine incisors were used to obtain five rectangular specimens of 2 mm in thickness, which were placed over a phosphor plaque digital system to obtain the radiographic images. These images were transferred from the phosphor plate to the computer by using the Digora Scanner. The radiopacity of each specimen was obtained by data were compared by ANOVA following Tukey test ($p<0.05$). The results showed statistically higher values of radiopacity of human ($70,52^a$) and bovine ($66,94^a$) enamel than swine enamel ($45,77^b$); bovine ($45,24^a$) and swine ($42,36^a$) dentin showed lower statistical values of radiopacity than human dentin($50,37^b$). In general, it seems that bovine teeth, more than swine, have radiopacity values similar to human teeth.
Supported by FAPEMIG

**48- Analysis of variables presented in microleakage tests.**
**PEREIRA, L.C.G.[1]; MARQUEZINI Jr, L.[2]; GARCIA, F.C.P.[2]; SILVA E SOUZA Jr[3,] M.H.; CARVALHO, R.M.[2]. ([1]Anápolis Dental School – AEE, Bauru Dental School – USP and University of Pará -UFPA)**

The microleakage test is one of the methods generally used to evaluate tooth/ restoration interface. Largely accepted in literature as screening test of marginal sealing, it has many variables in methodology. Dye diffusion technique into the interface is the oldest method and more used to evaluate the sealing capability. One of the drawbacks of this method is the achievement of a consensus regarding the dye used, its concentration and immersion time. Another obstacle present with the test is the assessment of the adhesive interface to evaluate microleakage, which is usually based on two-dimensional and three-dimensional analysis of infiltrated area. Two-dimensional evaluation is more used in literature because it is easier to execute and less time consuming. In this analysis, the microleakage evaluation is done in one or more perpendicular sections of the restoration surface. This analysis is very discussed because of the questioned clinical relevance of marginal leakage location and/or extension. The way that data are collected is also questionable. The qualitative method that uses score to evaluate linear extension of microleakage along the cavity walls is more used and considered limited because of its subjectivity. The quantitative method seems to be more appropriate to evaluate the marginal sealing efficiency. As long as there is lack of standardization in microleakage tests, more remote the possibility to make comparisons among different studies. Many variables are present in marginal leakage studies. The methodology offers many advantages and disadvantages. Some points must be realized and/or improved to obtain a more consistent evaluation. CNPq 140999/99-0 and 300481/95-0, 474226/03-4.

**49- Analysis of Trace Element Concentration in Enamel After Dental Bleaching Using Particle Accelerator. FRANCCI, C.[1]; MARKARIAN, R.A.[2]; SPADA, A.E.[1]; NAKAMA, R.[1]; MORI, M.[2]; ADDED, N.[3]; RIZZUTTO, M.A [3] ([1]Depto de Materiais Dentários e [2]Depto. de Prótese da Faculdade de Odontologia; Depto de Física Nuclear do Instituto de Física – USP).**

The objective of this study was to evaluate changes of trace element concentration in dental enamel after bleaching treatment with different products. A total of 15 bovine incisors teeth with the crown sectioned in two halves, the mesial half bleached and the distal one non-bleached (control), were randonly assigned in 5 experimental groups (n=3). Group 1: Opalescence 10% - Carbamide Peroxide (CP) 10%; Group 2: Opalescence 20% - CP 20%; Group 3: Whiteness Super 37% - CP 37%; Group 4: Crest Whitestrips – Hydrogen Peroxide (HP) 6%; and Group 5: Whiteness HP – HP 35%. The whitening systems were applied according to manufacturers´ directions at 37ºC. In the interval of applications the test halves, as well as during all the experiment, the control halves were stored in artificial saliva at 37ºC. The labial enamel was analysed by the nuclear physics technique ERDA (Elastic Recoil Detection Analysis), at a Pelletron tandem accelerator. Such non-destructive tecnique allowed measurement of Ca, P, O, Cl, and C concentrations above the limit of 100 mg/g (ppm) at a 1.5mm depth. The results were submitted to ANOVA with repeated measurements). For bleached teeth the following proportions were found: Ca/P 2.11, Ca/C 2.93, Ca/O 0.14, Ca/Cl 0.25, meanwhile for control teeth it was found: Ca/P 2.14, Ca/C 2.21, Ca/O 0.13, Ca/Cl 0.26. Just for power bleaching systems (Groups 3 and 5) the concentration of element C decreased. The O and Cl concentrations were similar before and after bleaching treatment for all the groups. It can be concluded that bleaching treatment did not affect the mineral structure when the low-concentration whitening systems were used. Meanwhile there was loss of C, probably from calcium carbonate, with more powerful whitening systems. The O element did not have any changes in concentration after the whitening therapy.

**50- Elucidation of trauma from occlusion as an etiologic factor of abfraction lesions by finite element method. SOARES, C.J.; SOARES, P.V.; PEREIRA, J.C.; FERNANDES NETO, A.J.; ABRÃO, A.; OLIVEIRA, L.C. School of Dentistry/ UFU – Biomechanics group.**

The aim of this study was to analyze the influence of trauma from occlusion on the origin of abfraction lesions by the finite element method. A buccal-lingual mandible section performed exactly over the mesio-lingual cusps of the first mandibular molar was computer designed, representing the enamel, dentin, periodontal ligament, spongy bone and cortical bone. The modulus of elasticity and the Poisson Coefficient were defined for each structure. An occlusal load was applied on maximum intercuspidation and on lateroprotrusion (work side). The tension distribution was analyzed by a computer software, Ansys 6.1, employing the Von Mises Tension. It was verified on the maximum intercuspidation a high tension concentration on the cervical area of the functional cusp. On lateroprotrusion this situation turned into a tension concentration around the buccal cortical bone. The finite element method showed a clear correlation of occlusal overload with abfraction lesions. Support: FAPEMIG/ CNPq.

**51- ABSENT**

**52- ABSENT**

**53- Evaluation of the sorption, solubility and microhardness of acrylic resins after disinfection with peracetic acid. OGLIARI, F.A.; SAMUEL, S.M.W.; HEHN, L. (Faculdade de Odontologia da UFRGS)**

The purpose of this study was to evaluate the influence of disinfection with peracetic acid 0,2% (STERILIFEÒ) in sorption, solubility and Knoop microhardness properties on chemically (CAAR) and heat-activated acrylic resins (HAAR). The experiments for sorption and solubility were made in accordance with International Organization for Standardization (ISO), specification #1567. Twenty samples were made out HAAR and a further 20 were made from CAAR, divided at random in 2 groups of 10 samples of each material. The first group was the control group and the second was disinfected with peracetic acid for ten minutes. The samples were kept in a desiccator with silica gel, at 37°C, until constant mass (M1) was obtained, being measured on a precision balance with 0.0001g resolution. Following this, the specimens were immersed in distilled water at 37°C for seven days and where then weighed to obtain mass M2. After this, the specimens returned to the desiccator, until reconditioned mass (M3) was obtained. The difference between M2 and M3 in relation to the volume of the specimens resulted in its sorption, and the solubility was calculated subtracting M3 from MI and dividing by the volume of the samples. For the microhardness experiment, 10 samples of each resin were made. The measurement of microhardness, was obtained before and after the disinfection of each specimen. The results showed that the disinfection with peracetic acid, both for CAAR and HAAR, did not cause any significant alteration in the properties of sorption and solubility. In relation to the microhardness, the results showed that there was no statistical difference between the microhardness before and after the disinfection, both for HAAR (p=0.992) and for CAAR (p=0.999). Therefore, the processes of disinfection of acrylic resins with peracetic acid may be considered viable when taking in consideration the analyzed properties.

**54- Superficial roughness and hardness evaluation of different acrylic resin teeth disinfected with peracetic acid. TANGO, R. N.; KIMPARA, E. T.; CORRER, A.B.; SINHORETI, M. A. C. (Piracicaba Dental School, UNICAMP, S.P. and São José dos Campos Dental School, UNESP, S.P.).**

The aim of this research was to evaluate superficial roughness and hardness of different acrylic resin teeth submitted to peracetic acid disinfection. Five maxillary central incisors of each mark (Jon/Jon, Vip Plus/Vip and Biotone/Dentsply) were embedded in heat-cured acrylic resin, leaving buccal face exposed. After cooling, the samples were grounded flat with SiC sandpaper. Prior to superficial roughness and hardness measurements samples were stored in water during 30 days. After baseline measurements, samples were immersed into 2% peracetic acid solution by 10 minutes. Superficial roughness (mm) and hardness (KHN) data were submitted to ANOVA and Tukey's test (5%). Superficial roughness (mm) means and standard deviations values for each mark, prior and post disinfection were, respectively: Jon (0.1085 ± 0.0094) and (0.1121 ± 0.0147), Vip (0.0962 ± 0.0034) and (0.0989 ± 0.0033) and Biotone (0.1226 ± 0.0198) and (0.1295 ± 0.0191). Hardness (KHN) means and standard deviations values for each mark, prior and post disinfection were, respectively: Jon (19.96 ± 0.46) and (20.65 ± 0.70), Vip (19.86 ± 0.34) and (20.68 ± 0.21) and Biotone (21.81 ± 0.96) and (22.14 ± 0.46). There were no significant statistical differences in superficial roughness and hardness prior to and post disinfection in the same teeth mark. Biotone teeth presented higher hardness values prior to and after disinfection compared to the others two marks. Biotone teeth superficial roughness values prior to and after disinfection were statistically higher than Vip teeth and Jon teeth presented comparable performance to both Biotone and Vip.

**55- Analysis of the thermodynamic behavior of acrylic resins polymerized by microwave irradiation and conventional water bath. MARTINS, J.H.B.; FREITAS, C.A.; CASTILIO, D. - Faculdade de odontologia de Bauru - USP.**

Acrylic resins (methyl methacrylate) present unsuitable thermodynamic behavior during thermal polymerization mainly if the temperature exceed boiling point (100.8º C), what brings about an increase in the degree of porosity. The thermodynamic study was carried out with acrylic resins ClássicoÒ and Onda CrylÒ, thermal polymerized by water bath (3 hours, Tuckfield, Worner and Guerin in 1943) and by microwave (520W – 10 minutes, Nishii in 1968). The temperature of the thermal polymerization was recorded by thermocouples (copper / constantan) and monitored by electric - electronically equipment and computers. The 2.0 mm spherical thermocouples were placed into acrylic resin and gypsium investment and the thermal polymerization was monitored. Twenty-two specimens (65 / 49 / 5 mm) were obtained after finishing and polishing and the degree of porosity was analyzed stabilizing temperature parameters in thermal polymerizations. Statistical analysis was performed using Mann - Whitney and "t" Student tests. Significant difference was observed in the degree of porosity and maximum temperature between thermal microwave polymerization and polymerization by water bath. The microwave thermal polymerized acrylic resin quickly heated to 140º C and showed high incidence of porosity, whereas in thermal polymerization by water bath the maximum temperature reached 99.8º C and specimens were porosity free. According to the dimension of specimens, the power of the microwave and the time of exposure to microwave used in the present study, polymerization by microwave irradiation presented unsuitable thermodynamic behavior on acrylic resin, characterized by high incidence of porosity.

**56- Evaluation of shore A hardness of soft denture liners after different disinfection cycles. PAVAN, S.; IWATA, M.F.; SANTOS, P.H.; ARIOLI, J.N. (Araraquara Dental School, UNESP, Araraquara, S.P.).**

The aim of this study was to evaluate the effect of six disinfection cycles using 2% glutaraldehyde, 5% sodium hypoclorite, 5% chlorhexidine solutions and microwave oven energy on the hardness of soft denture liners Mucopren soft and Eversoft. Forty samples (36x7x6 mm) of each material were processed in flasks according to manufacturers' recommendation and stored in distilled water for 24h at 37º C. After this period, ten specimens of each material were submitted at the first disinfection cycle and at regular intervals of three days overall six procedures, in each disinfectant solution for 10 minutes or placed in a microwave oven for 3 minutes at 500W. Hardness readings were made with Shore A durometer according to the ASTM D-2240 specification, directly after specimen fabrication (control), before and after each disinfection procedure. Data were submitted at ANOVA and Tukey's test ($p<0.05$). The disinfection with 2% glutaraldehyde did not change hardness values of Eversoft during all the period; The Mucopren soft showed greater stability than Eversoft in all disinfection times independent of disinfection technique.
FAPESP: 02/02870-8

**57- Comparative analysis of stress distribution in upper incisors restored with different post system. OLIVEIRA, L.C.A.; CANDIDO, M.S.M.; DUARTE JR.,S.L.L.;OLIVEIRA, S.A.G.; ABRAHÃO, A. (Faculdade de Odontologia de Araraquara – UNESP – Araraquara - SP; Faculdade de Engenharia Mecânica de Uberlândia - UFU - Uberlândia –MG. )**

This work proposes a study about the distribution of mechanical stresses in the radicular dentin of restored with different posts systems, by means of the photoelastic and the finite element techniques. This analysis is conducted for the following posts systems: carbon fiber, fiberglass, zirconium, stainless steel, titanium and cast metal (Cu-Al alloy) and the healthy tooth (control). For this purpose, representative two-dimensional models of the central upper incisor are built for both methods. These models are subject to a 100N load applied at the tip of the crown, at 45° from the axle along the tooth. The results are expressed in terms of the Von Mises and Sy stresses and the fringe order, for the finite element and photoelastic methods, respectively. Through the analysis of these results, it can be concluded that significant stress distribution differences arise between the six different pin systems tested, so that those made of zirconium, stainless steel, titanium and cast metal produced high stress concentration at the post/dentin interface region. In the cases of the carbon fiber and fiberglass pins, on the other hand, the stress distribution along the radicular surface is uniform, lacking stress concentration areas. The zirconium, stainless steel, titanium and cast metal pins present mechanical properties which are different from those of the tooth structure, resulting in significant alterations over the mechanical behavior of the dental structure. The non-metallic pins comply more satisfactorily with the requirements necessary to provide a mechanic behavior more similar to that of the dental structure, the compatibility among the mechanical properties found in these systems and the dentin providing a biomimetic behavior, reducing the risk of failure or root fractures.
APOIO: FAPESP (00/06331-9)

**58- Comparison of cervical adaptation in class II esthetic and metallic restorations. LARA,M.V.Z.; MACHADO, M.P.; VAZ, R.R.; MOTA, J.M.L.F. Dental Materials- FOUFMG- Belo Horizonte**

The aim of this study was to compare the cervical adaptation of metallic and esthetic inlays. The restorations were made in stone master models, obtained from an impression of a stainless steel master model. The metallic restorations were made in AgSn alloy, from a wax pattern. It was constructed pressing a glass lamina over a metal ring in the master model, containing plastic wax. The pattern was removed from the master model and included in gypsum bonded investment. The bubbles in the surface of the restorations were removed to avoid seating interference. The esthetic restorations were made from indirect resin Art Glass. They were obtained adapting a 0,2g increment of the resin in the gingival, pulpar and axial walls, polymerizing 180s, adapting an acrylic ring in the stone model, and then another increment of 0,2g was adapted, pressing it with a glass lamina and polymerizing 180s. The restorations were removed from the stone model and polymerized 180s. There were made five restorations for each group. The marginal adaptation was measured in an optical microscope, after adaptation of the restoration in the master model with a vertical gauge that made a seating force of 1,0 Kgf. The Mann_Whitney test showed a statistical difference ($p<0.05$) and we can conclude that the esthetic restorations had better marginal adaptation.

**59- Influence of cavity preparation and indirect restorative materials on the tension distribution over posterior teeth. SOARES, C.J.; MARTINS, L.R.M.; FERNANDES NETO, A.J.; ABRÃO, A.; OLIVEIRA, L.C.; FONSECA, R.B. School Dentistry-UFU, Biomechanics group.**

The aim of this study was to analyze the influence of cavity preparation and indirect restorative materials on the tension distribution over posterior teeth employing the Finite Elements Method. A buccal-lingual mandible section performed exactly over the mesio-lingual cusps of the first mandibular molar was computer designed, representing the enamel, dentin, periodontal ligament, spongy bone and cortical bone. The cavity preparation was defined as conservative (1) or extensive (2) it follows: GII: inlay (1); GIII: inlay (2); GIV: onlay (1); GV: onlay (2); GVI: overlay (1); GVII: overlay (2). The elasticity modulus and the Poisson Coefficient were defined to each structure, and to the resinous cement, ceramic material (Empress) and ceromer (Targis). An occlusal load was performed on maximum intercuspation and on lateroprotrusion (work side). The tension distribution was analyzed by a computer software, Ansys 6.1. It was verified on the maximum intercuspation a higher tension concentration on the functional cusp. On lateroprotrusion, this situation was greater on the groups with an extensive occlusal opening. The Von Mises Tension concept proved that the restorative material type may influenciate the tension distribution. The ceramics tends to accumulate the tension inside the restoration body, and the ceromer tends to transfer it to the tooth structure.
Support by: FAPEMIG/CNPq.

**60-ABSENT**

**61- Analysis of the content of inorganic particle of adhesive systems. CRUZ, C.A.S.; REGES, R.V.; CASTRO, F.L.A.; ADABO, G.L.; FONSECA, G.R.; SANTOS, P.H.; SINHORETI, M.A.C. Materiais Dentários – FOAr - UNESP/FOP-UNICAMP.**

The aim this study was evaluate of content of inorganic particle of adhesive systems: Single Bond (3M); Optibond Plus (KERR); One Step Plus(Bisco); Master Bond (Biodinâmica); One Up F (Kuraray); Clearfill SE Bond (Kuraray); Prompt-On (3M). Five 5x 2 mm specimens of each system were made and light cured for 40 seconds. The content of particle was determined in analytical balance (Sartorius) by measuring the mass of the specimens before and after the elimination of the organic matrix in electrical furnace at 700ºC for 3 hours. The results show the particle content of the materials as mass percent: Optibond Plus(16%), Clearfill SE, Bond (10%) e One Step Plus (5%). The materials Single Bond, Master Bond, One Up F e Prompt-On did not present any mineral residue. The adhesives One-Step Plus (5%) and One Up F (0%) do not present the particle amount indicated by the manufacturer (8,5 and 16% in mass, respectively).

**62- SEM characterization of laboratorial composite resins subjected to different surface treatments: a comparative study . TAVEIRA, Z.Z.*; HERRERIAS, T.; SILVEIRA, R.R.; LAMEIRAS, F.S.; SILVA, V.V.; GIOVANNINI, J.F.B.G. ; VAZ, R.R. Department of Restorative Dentistry - FO-UFMG/ CNEN-CDTN - UFMG/ Department of Metalurgy and of Mines - EEUFMG/ Newton Paiva University Center**

The establishment of a proper pattern of retention has been achieved through surface treatments on the inside of the indirect restorations in composite resins, previously to cementation. The aim of this study was to evaluate and compare three of these methods that can be used by the professional, in two laboratorial composite resins available in the market. The selected materials were Vita Zeta LC$^{\Diamond}$ (VITA) and Cristoball$^{\Diamond}$ (Dentsply-Ceramco). For each resin selected, four samples were made, from a burning process with timing and temperature recomended by the respective manufacturers. Next, the samples were divided in groups according to the surface treatment type: conditioning with $H_3PO_4$ (37%, 5 minutes, followed by wash), conditioning with HF (10%, 5 minutes, followed by wash) and sandblasting (particles of $Al_2O_3$ de 50mm, controled pressure of 50lb and end of the tip/sample of 10,0mm). One sample did not receive any kind of treatment and was used for control. The samples were prepared for observation in scanning electron microscopy (SEM) to evaluate the microstructure. The effect of the surface treatment in the microstructure of the resins was evaluated through images obtained from different magnifications (500, 750, 1000 e 1500 times). After analysis, comparisons were made between control and different surface treatment groups, for each composite resin evaluated. It was concluded that for the resins evaluated in this study the conditioning with $H_3PO_4$ showed a superficial pattern, indicating low efficacy as a mechanic retention mean. The conditioning with HF showed more severe and higher descontinuity, mostly when considering Cristoball$^{\Diamond}$. For both resins, the sandblasting with $Al_2O_3$ particles showed a intermediate retention pattern, but with higher uniformity, indicating possible superiority as a surface treatment method previously to cementation of the restorations.

**63- Flexural strength of resin composites light cured by LEDS. CARVALHO, L.D.; MAIA, H.P.; REBELATTO, C.; CHAIN, M.C.; RODRIGUES, C. C. (Dental Materials, Federal University of Santa Catarina)**

The aim of this study was to test and compare two light curing units(LEDs), LED-Ultrablue/DMC – 1$^{st}$ generation (LD) and L.E.Demetron/Kerr – 2$^{nd}$ generation (LK), with the halogen light curing - Optilux/Demetron 520mW/cm$^2$(H), evaluating the flexural strength of two composite resins: Filtek Z250/3M-Espe (hybrid) and Durafill/ Heraeus Kulzer (micro filled). Thirty bars (25X 2,0 X 2,0 mm) were fabricated (five for each combination resin/light curing unit) using a metallic mold. The light exposure was done by both sides, for 5 times of 40 seconds each time, aiming to cover the whole bar. The specimens were stored in distilled water for 24 hours and then tested with a three point bend test, in a universal test machine INSTRON 4444, at a cross-head speed of 0.75 mm/min until the bars failure. Flexural strengths were calculated in MPa and data were analyzed using ANOVA test. The flexural strength means obtained were: H/Z250=166.24; LD/Z250=172.91; LK/Z250=168.82; H/ Durafill=62.51; LD/Durafill=51.75; LK/Durafill=64.81. There was no statistical difference among the flexural strength means obtained with the three light sources ($p<0.05$). There was statistical difference only between the hybrid resin, which shows increased values, and the micro filled resin. As shown by the results, the light sources tested do not affect resin composite flexural strength.

**64- Castability and hardness of a NI-CR-based commercial alloy in three different conditions: new (first use), recast, and new mixed with scraps. FERNANDES, D.R.*; CONSANI, S.; CORRER SOBRINHO, L.; SINHORETI, M.A.C.; PANZERI, F.C.**

The purpose of the present study was to verify the influence of the heat source on the castability and Rockwell 30T hardness of a Ni-Cr-based commercial alloy (VeraBond II) in three different conditions: new (first use), recast, and new added with scraps. In order to evaluate castability, 10 specimens were made for each alloy condition, using a polyester sieve with 11x11 filaments, 0.22mm thick. This screen was fixed to 0.25mm threads along the extension of two sides, and a post was fixed to its vertex. In order to perform hardness analysis, circular specimens made of regular blue wax measuring 8.0 mm in diameter and 2.0 mm thick were connected to the post, forming the sprue. The patterns were then fixed to the casting chamber. The patterns were embedded into a phosphate-bonded investment. Casting rings were placed in an electric oven was reached, and were then filled with 15 grams of alloy, molten either by an oxigen/acethylen gas torch or by induction as heat sources. Castability analysis was performed used to count the number of spaces which were filled by the alloy. In order to evaluate hardness Rockwell 30T, specimens were embedded in chemically-activated acrylic resin and then placed on a Testor HTI Super-Panambra hardness tester. Results were submitted to analysis of variance and averages were compared by Tukey's test at 5 %. The values of castability (%) induction as heat sources or by gas torch were, respectively: new alloy (98,6 and 83,3), new mixed with scraps (98,3 and 74,2) and recast (97,7 and 80,3) and the average hardness were respectively: new alloy (87,2 and 85,9), new mixed whith scraps (86,1 and 87,2) and recast (85,3 and 76,9).
Between the heat sources, with induction presenting the best castability results ($p<0.05$). There were no statistically significant differences in the average hardness values between torch or induction as the heating source for new and mixed alloys, although induction showed the best results, leading to statistically significant differences in hardness, when recast alloy was used.

**65- Comparative profilometric analysis between two polishing protocols for feldspatic ceramics. RIBEIRO, F.S.V.[1]; VASCONCELOS, W.A.[2]; VAZ, R.R.[3]; JANSEN, W.C.[3], BRANCO, J.R.T.[2]. 1- Graduate Program 2- Professor at UE Montes Claros 3- Professor at F.O.-UFMG.**

The occlusal adjustment in onlays and inlays of porcelain should be made after the cementation, since there is the possibility of fracture. The aim of this study is to compare the effectiveness of two polishing protocols through the three-dimensional profile analysis of the feldspatic ceramic surfaces. Eighteen cylindrical specimens were made, six as control and twelve as experimental. The first group was composed by glazed specimens and the other two experimental groups, composed by polished specimens by the sequence of polishers KGS and NTI. A wear with a tip 4138 (KGS) was made in the specimens of the experimental groups in order to cause an irregularity in the surface simulating an occlusal adjustment. The profilometric analysis was made in a surface of 1 mm$^2$ by a three-dimensional profilometer capable to provide a qualitative result (images 3-D) and a quantitative result (roughness average µm). After the analysis, the parameters of average roughness were subjected to analysis of variance (á =0.05). It was verified that the average roughness of the control group was 2,68 µm while for the groups KGS and NTI were 3,03 µm and 2,98 µm, respectively. There were no statistically significant differences between the control group and the others. It can be concluded that the use of these polishing protocols, for this type of porcelain, produces the same effectiveness as the glazed specimens regarding to the surface smoothness.

**66- Effects of processing method on flexural strength, diametral tensile strength and hardness of ceramic systems. OLIVA, E. A de ; SCHALCH, M.V. ; CRUZ, C.A .S. (Faculdade de Odontologia de Araraquara, Universidade Estadual Paulista).**

The aim of this study was to compare flexural strength, diametral tensile strength and hardness of ceramics AllCeram (conventional fusing), Cergogold (heat-pressed) and Ceramco 2 (conventional fusing and heat-pressed). Tem especimens were made for flexural test (25mm length, 5mm width, 2mm thick – ISSO 6872), and 15 specimens for diametral test (6mm diameter, 3mm thick). The tests were done in a MTS 810 machine (Material Test System – USA) , with load cell of 10kN and crosshead-speed of 0,5mm/minute, managed by Test Star II software (IBM, USA). Five samples of each ceramic were included in autocured resin JET (Artigos odontológicos Clássico, Brazil), polished and submitted to Vickers hardness test in durometer Buehler (USA), with load of 1.0 kgf for 30 seconds. The mean flexural stengths and hardness of manufacturer processing technique were significantly similar for Ceramco 2 (73,75Mpa/478,8VNH) and Cerogold (68,96Mpa/495,3VNH), and significantly stronger than All eram (50,51 / 451 VNH). All materials did not differ for diametral tensile (All Ceram, 29,74 Mpa; Cerogold, 33,95Mpa; Ceramco 2, 34,15MPa). Effects of processing method (conventional fusing and heat-pressed) did not influence on flexural strength (73,75MPa / 77,88MPa), diametral tensile strength (34,15 MPa / 33,52 MPa) and hardness (478,8VHN / 471,5VHN) of Ceramco 2. However, for Ceramco 2 (heat-pressed) flexural strength (77,88 MPa) became significantly higher and hardness (471,5VHN) became significantly lower than Cergogold (68,96MPa, 495,3 VHN).

**67- Flexural strength, diametral tensile strength and hardness of infra-structure of all-ceramic systems. SCHALCH, MV.S.; OLIVA, E.A. de; CRUZ, C.A.S. (Faculdade de Odontologia de Araraquara, Universidade Estadual Paulista.**

The aim of this study was to compare flexural strength, diametral tensile strength and hardness of all-ceramic systems. Ten specimens were made for flexural test (25 mm length; 5 mm width; 2 mm thick – ISO 6872), and 15 specimens for diametral test (6 mm diameter, 3 mm thick). The tests were done in a MTS 810 machine (Material Test System – USA), with load cell of 10kN and crosshead-speed of 0,5 mm/minute, managed by Test Star II software (IBM, USA). Five samples of each ceramic were included in autocured resin JET (Artigos odontologicos Classico, Brazil), polished and submitted to Vickers hardness test in durometer Buheler (USA), with load of 1.0 kgf for 30 seconds.

| Properties | Ceramco 2 (convencional fusing) | Ceramco 2 (pressed) | AllCeram | Cergogold |
|---|---|---|---|---|
| Flexural strength (MPa) | 73,75 ab | 77,88 a | 50,51 c | 68,96 b |
| Diametral tensile strength (MPa) | 34,15 a' | 33,52 a' | 29,74 a' | 33,95 a' |
| Hardness (VHN) | 478,8a''b'' | 471,5 b" | 495,3 a'' | 495,3 a'' |

**68- Influence of photo-polymerization of two commercially available dual resin cements on bond strength to a NI-CR dental alloy. ANDRETTI, F. L.; PRATES, L. H. M.; MAIA, H. P.; FREITAS, S. T. (School of Dentistry, Graduate Program of Dentistry, UFSC, Dental Materials).**

The purpose of this study was to evaluate the bond strength of two resin cements (Rely-X, 3M Dental Products, and Enforce, Dentsply) to sandblasted Ni-Cr dental alloy (Kromalit). Forty pairs of cylinder-shaped castings measuring 12 x 6 ø mm were seated and distributed in 4 groups: Group 1 (Enforce without photo-polymerization)(ENF_A); Group 2 (Enforce with photo-polymerization); Group 3 (Rely-X without photopolymerization); and Group 4 (Rely-X with photopolymerization) with 10 pairs each. The specimens were mounted in a tensile device designed for tensile testing (Instron, model 4444, Canton, Mass., USA) and submitted to a tensile load (cross-head speed = 0.5 mm/min) after 24hr water storage. The mean values for tensile bond strength and standard deviations for failure were: 13.36±3.38, 13.66 ± 2.94, 12.66 ± 2.65, and 16.68 ± 5.11 for ENF_A, ENF_F, RE_A, and RE_F, respectively. It was observed no statistically significant differences between the four groups (2-way ANOVA, P=.0866).

**69- Evaluation of the adhesion of metallic brackets to enamel with self-etch primer. OLIVEIRA, W. J.*; BORGES, G. A.*; GUIMARÃES, F. M.**. *Professor of Dental Materials of the University of Uberaba – UNIUBE. **Student Dental of the University of Uberaba – UNIUBE**

The use of self-etch primers to bond brackets to enamel began to be used by orthodontists, however, some professionals do not regard this as a reliable bond. This work aimed to evaluate the bond strength of brackets to enamel using a self-etch primer. Bovine incisors were partially included in acrylic resin leaving exposed the buccal aspect. After prophylaxis with pumice + water, specimens were divided into: Group I (n=10), bonded using the total-etch Scotchbond Multi-purpose–3M system; and Group II (n=10), bonded with self-etch Clearfil SE Bond – Kuraray system. Both groups were used in conformity with the manufacturers. After bonding, composite resin Filtek Z250 – 3M color BO.5, was applied to the brackets (12,95mm$^2$ ), and they were seated to the enamel surface under a load of 300g. That standardized pressure was obtained through a needle of a modified Vicat. After the removal of excess, specimens were photo-cured with a halogen light Ultralux–Dabi Atlante at 400mW/cm$^2$ for 40s. Immediately after curing, the specimens were subjected to a Shear Bond Strength (SBS) test. A steel wire was adapted to the claws of the bracket and pulled in tension parallel to the surface at 0,5mm per minute in a EMIC DL 3000 testing machine with a load cell of 50Kgf. The results showed bond strength for Group I of 12,90 MPa (sd 1,94) and for Group II of 13,09 MPa (sd 1,64). There was no statistically significant difference between the bond strength values (p>0.01). The self-etch primer Clearfil SE Bond - Kuraray produced an effective adhesion when compared with conventional Scotchbond Multi-purpose–3M.

**70- Comparison of the brackets adhesion to enamel using LED with self-etch primer and conventional adhesive. GUIMARÃES, F. M.*; OLIVEIRA, W. J.**; . BORGES, L. H**. *Student Dental of the University Uberaba; **Integrant Group of Research in the Dental Materials University Uberaba**

Recently, orthodontist have been using LED light sources (Light Emitting Diode) to bond brackets to enamel, however the capacity of polymerization of those light sources is questioned. This work aimed to verify the bond strength of brackets to enamel using conventional adhesive system and self-etch primer, cured by an LED light-curing unit. Twenty bovine incisors had their coronal portion separated and included in acrylic resin with the labial aspect exposed. The surfaces were subjected to prophylaxis with slurry of pumice + water. The application of the adhesive systems followed each manufacturer's orientations. Group I (self-etch primer) received the application of Clearfil SE Bond – Kuraray (n=10). Group II (conventional adhesive) was etched (phosphoric at 35% - Etchant – 3M) and immediately received the application of the adhesive system for enamel Scotchbond Multi-purpose – 3M (n=10). The metallic bracket Morelli number 22 (12,95mm$^2$) was bonded to the surface with a composite Filtek Z250–3M color BO.5, under a load of 300g using a modified Vicat needle. Specimens were immediately light-cured for 40s with Ultraled – Dabi Atlante (110mW/cm$^2$). The specimens were then subjected to the SBS (Shear Bond Strength) in a testing machine, EMIC DL 3000. A steel wire was adapted to the brackets and pulled in tension in a orientation parallel to the labial face, at 0,5mm per minute, with a load-cell of 50Kgf. Bond strength values were 10,27 MPa (sd 2,41) for Group I and 10,20 MPa (sd 2,03) for Group II. There was no statistically significant difference between groups (p>0.01). The data showed that LED lamp was effective to bond brackets to enamel using both total-etch and self-etch adhesives.

**71- Effect of adhesive systems on tensile strengrth of cheminal- and dual-cured resin cements. MENDONÇA, J.S.; SILVA E SOUZA JR., M.H.; CARVALHO, R.M. - University of Fortaleza; Bauru School of Dentistry – University of São Paulo**

The purpose of this study was to investigate the influence of different adhesive systems on tensile strength of chemical- and dual-cured resin cements. One-millimeter layers of a resin composite (Z100) were incrementally inserted into silicon moulds and light-activated up to 5mm. The bonding surface of each resin composite block was sandblasted and the adhesive systems (Single Bond, Prime & Bond NT and Scotchbond Multipurpose Plus) were applied according to the manufacturer's instructions. The resin cements (Rely X and Bistite II SC) were mixed and applied to the bonding surface and two resin composite blocks were fixed one-to-another under a load of 5kg. Excess of cement was carefully removed from the margins and the dual-cured resin cement was light-activated. For the chemical-cured resin cement, Air Barrier was liberally applied around the resin cement to ensure anaerobic polymerization. After 24 hours of storage in deionized water at 37ºC, the specimens were serially sectioned transversally to the bonded interface in both "x" and "y" directions to obtain several bonded sticks out of each specimen, with a cross-sectional areas of approximately 0,8mm$^2$. Each individual stick was attached to the Bencor-Multi-T testing device with cyanocrylate adhesive and tested in tension in a universal testing machine at 0,5mm/min until failure. The results were calculated and expressed in MPa. Two-way ANOVA showed that statistically significant differences were observed for both factors (adhesive system and resin cement) and for the interaction between these factors (p<0,001). There was a significant difference between the tensile strength results for both resin cements when they were used in association with Single Bond and Prime & Bond NT (p<0.05). Therefore, it can be concluded that the tensile strength of the resin cements is affected by the use of different adhesive systems. Supported by CAPES, CNPq 300481/95-0.

**72- Simplified adhesive systems and Luting cements. Are they compatible? PEGORARO, T.A.; SILVA, N.R.F.; CARVALHO, R.M.; TAY, F.R.; PASHLEY, D.H.. - FOB - USP, Bauru, São Paulo**

The purpose of this study was to test the compatibility between simplified adhesive systems and their respective luting cements for bonding resin crowns to dentin. Indirect resin crowns were prepared from and cemented to exposed, flat dentin surfaces of human third molars using either Panavia F (Kuraray), Bistite II SC and DC (Tokuyama), Rely X (3M, ESPE) and Enforce (Dentsply) with their respective simplified adhesive systems. Experimental groups were prepared in a similar way, except that a layer with a non-acidic adhesive resin (Scotch Bond Multi Purpose #3) was placed on the bonded dentin surface before luting procedures. Bonded teeth were stored in water for 24h at 37º C and then sliced into beams of 0.8mm$^2$ for microtensile testing at 0.5mm/min. The mean values are in Mpa ± SD(N). The data were analised by two way ANOVA.

| Luting agent / adhesive system | Manufacture's instructions | Non acidic adhesive | Significance |
|---|---|---|---|
| Panavia F / ED Primer | 25,29 ± 8,45 (40) | 35,59 ± 15,56 (31) | Yes |
| Bistite II SC / Bistite's Adhesive | 35,03 ± 8,90 (36) | 28,72 ± 9,20 (31) | No |
| Bistite II DC / Bistite's Adhesive | 33,83 ± 15,97 (47) | 31,49 ± 12,02 (46) | No |
| Rely X / Single Bond | 37,62 ± 12,46 (44) | 31,52 ± 13,64 (32) | No |
| Enforce / Primer Bond 2.1 | 25,29 ± 10,41 (35) | 23,61 ± 7,85 (30) | No |

Placement of a layer of non-acidic adhesive resin separating the simplified adhesive system from the respective luting cement resulted in significantly higher bond strengths for Panavia F (p<0.05). No effects were observed for the other materials (p>0.05). Therefore, some luting cements may not be compatible with their respective simplified adhesive system. FAPESP 02/02179-3, CNPq 004481/95-0, 300481/95-0.

**73- Effects of different surface treatments on shear bond strength between bovine dentin and indirect resin. VASCONCELOS, J.K.O.S.*; SANTANA, T. D.*; MACHADO, M. P.**; VAZ, R. R.** (* Faculdade de Odontologia da Puc-Minas e ** Faculdade de Odontologia da UFMG, Belo Horizonte, MG).**

The aim of the study was to evaluate the bond strength between bovine dentin and indirect resin (DialogÒ/Schütz) subjected to different surface treatments. Thirty bovine incisors, recently extracted, were delineated with carborundum disks, included in PVC rings, and fixed with auto-cured acrylic resin. Disks with 4,0mm in diameter and 3,0mm in thickness were made with indirect resin (DialogÒ/Schütz) and distributed into 3 groups with 10 samples each: group I, control/no surface treatment; group II, sandblast; and group III, sandblast and silane agent (ScotchPrimer/3M). The dentin substrate was treated with sandblast, phosphoric acid 37% for 15 seconds followed by Scotch Bond Multipurpose Plus (3M) adhesive system. The cementation of the disks was made with C & B resin cement (Bisco). The samples were stored in distilled water at 37°C for 24 hours. Thereafter, the specimens were subjected to shear testing with an InstronÒ testing machine, model TDLM 30 at a cross-head speed of 0,05mm/min and 100Kg. The results obtained in Kgf were converted to MPa and analyzed statistically by Kruskall-Wallis and Newman-Keuls tests. The results showed statistically significant differences between groups I, II e II and the group III showed the higher values of shear bond strength.

**74- Evaluation of degree of composites resins polymerization using hardness vickers method. SOUZA, C. S.; ARAÚJO, P. A.; GARCEZ, R. M. V. B.; CARVALHO, M. C. F. S.. (FOB-USP e USS)**

The aim of this study was to evaluate the degree of polymerization of two composites resins photo cured by three different techniques. Three hypotheses were formulated: 1-there is no difference between composites resin hardness; 2- there is no difference between top and base hardness; 3- there is no difference among the photocuring techniques. Thirty samples of Z100/3M ESPE and Definite/Degussa of 5mm of diameter x2 mm thickness were prepared and photocured by three different techniques: 1) 150 mW/cm$^2$ during 20 seconds + 300 mW/cm$^2$ during 20 seconds + 600 mW/cm$^2$ during 20 seconds; 2) 150 mW/cm$^2$ during 20 seconds + 600 mW/cm$^2$ during 40 seconds e 3) 600 mW/cm$^2$ during 60 seconds. After the polymerization, the samples were polished with sandpapers of #1000, #1500 and #2000 followed by felt disks and polishing pastes. The samples were stored in deionized water for 37ºC. After 1 h and 1 week, Vickers microhardness of top and base surfaces of the samples was measured. Data were submitted to ANOVA and Tukey's test for statistical analysis ($p<0.05$). All tested hypotheses were rejected. Higher hardness values were obtained when high intensity photoactivation was used, regardless of the material. Top surface presented higher Vicker hardness than base surface, regardless of the photocuring technique used. Z presented higher hardness than D in all evaluated conditions.

**75- Influence of the photoactivation technique on shrinkage and microhardness of a dental composite resin MOREIRA FILHO, M.; SOUZA, E. L.; BARREIROS, I. D.; GONÇALVES, P. J. M.; GIOVANNINI, J.F.B.G. - Departament of Restorative Dentistry – Faculty of Odontology – UFMG - Brazil**

This study evaluated the influence of the technique of photoactivation in the polymerization shrinkage and Vickers microhardness of a dental composite resin. Samples of the microhybrid resin Fill Magic® have been made using a cylindrical matrix of diameter and thickness previously determined (MEASURE A). After that, the resin was inserted in one single increment (2,0mm) and polymerized by the Degulux® light source. Half of the samples (n=10) was polymerized following the technique of the delayed pulse (soft start), with pulses of 200, 400 and 700mW/cm$^2$, in a total time of 40s. The other half was polymerized in conventional technique, also for 40s. Afterwards, the samples were removed from the matrix and re-evaluated in its diameter (MEASURE B). The difference between these values characterized the shrinkage suffered for the material. The technique of the delayed pulse demonstrated average values of shrinkage of 0,472%, and for the conventional technique average values of 0,336% had been found. Considering microhardness, the results showed: technique of the delayed pulse (56,13VHN) and conventional (57,13VHN). It can be concluded that the polymerization technique influenced significantly in the polymerization shrinkage of the evaluated composite resin, although the microhardness was not significantly affected.

**76- Evaluation of superficial and deep microhardness of composite resins polymerized with LED curing units. FRANCCI, C.; COSTA, J. A.; DANDAS, A.; MIRANDA JR, W.G. (Department of Dental Materials – School of Dentistry, University of São Paulo).**

The objective of this study was to evaluate the Knoop microhardness of composite resins of several depths using LED light curing units. 200 specimens with 2x3x6mm (LxWxH) of 10 composite resins (ALERT, Pentron; Clearfil APX, Kuraray; Durafill VS, Kulzer; Esthet X, Dentsply; Filtek Z250, P60 and Supreme, 3M ESPE; Herculite XRV and Point 4, Kerr; IntenS, Vivadent) were light-cured with 3 LED units (LE Demetron 1, Kerr; DMC,DMC; Ultraled, Dabi-Atlante) and 1 tungsten-halogen light unit (VIP, Bisco). The Knoop microhardness was evaluated in depths (0,2; 1; 2; 4 and 5 mm) (n=5). Repeated measures ANOVA revealed that the factors depth, composite resins, light-curing units and the interaction composite/light unit presented significant differences ($p<0.001$). Clearfil APX showed higher microhardness (Mean±SD) on the top (0,2mm) (71,1±8,6), followed by the composites Filtek Z250, ALERT and P60 (59,0±4,9; 57,4±10,0 and 55,5±4,9). On the botton (5mm), the composites Clearfil APX and Filtek Z250 presented the highest hardness (40,3±19,0 and 36,9±10,4). The Durafill, followed by IntenS, showed the lowest hardness on the top (15,0±1,7 and 33±7,1) and on the botton (6,8±2,1 and 17,2±6,5). On the top the LE Demetron 1, the VIP and the DMC had similar efficiency, higher than the Ultraled. In depth the LE Demetron 1 was superior to VIP and DMC, similar between them, and the Ultraled presented difficulties to polymerize. The ANOVA of the values of difference between superficial (0.2mm) and deep (5mm) Knoop microhardness revealed that all the studied factors were significant ($p<0,001$). The light curing unit LE Demetron 1 presented the lowest loss of efficacy in deep layers, followed by the VIP and the DMC, which were similar between them, and the Ultraled. The LED units showed efficacy to polymerize the composite resins evaluated on the top, but on the bottom, neither all the units had good performance. The composite resins presented different superficial microhardness due to the filler composition, independent of light-curing unit used.

**77- Evaluation of the depth of cure of a dual resin cement cured under L.E.D. beneath ceramic copings with different widths and optical properties. FRANCISCHONE, A.C.*; D´ALPINO, P.H.P.; FRANCISCHONE, C.E. Bauru School of Dentistry, Brazil.**

This study evaluated the influence of ceramic copings with different widths and optical properties on the depth of cure of a dual resin cement. The tested resin cement was 3M Rely X and LED light used was Ultra led yielding an intensity of approximately 150 mW/cm$^2$. The time of light exposure was 40 sec. The depth of cure data was obtained by accomplishing different ceramic copings containing 8 mm in diameter to an 1,5 mm-thick Procera AllCeram coping, simulating clinical situation. Ten experimental groups were obtained, being 2 of them control groups: only chemical cure and only fotocuring without copings interference. Experimental groups were: G0- photocured (no barrier); G1- AllCeram 1,5; G2- 0,4 white; G3- 0,4 translucent; G4- 0,6 (A2); G5- 0,8 zircon; G6- AllCeram 1,5 + 0,4 white; G7- AllCeram 1,5 + 0,4 translucent; G8- AllCeram 1,5 + 0,6 (A2); G9- AllCeram 1,5 + 0,8 zircon; G10- control, no photocured (chemical cure). Three specimens per group were obtained and a special device with rotator instrument with a round steel bur #8, connected to a 320 g weight was used to determine the polymerization extension. The opposite surface of polymerization was considered cured when the bur reached the same hardness value on the surface directly turned toward the light source. A caliper measured the remaining cured specimen. All means were found in millimeters. The statistical analysis (one-way ANOVA and Tukey's test) showed significant differences between group 0 and groups G6, G7, G8, and G9. There was no significant difference between group G10 (chemical activation) and groups G7, G8, and G9, meaning that in these groups light activation did not affected the resin cement. The results suggested that the ceramic copings with different widths and optical properties and that the type of activation interfere on the depth of cure of the dual resin cement evaluated.

**78- Diametral tensile strength of two resin-modified glass-ionomer cements in different p/l ratio and time of storage. ARATANI, M.; PEREIRA A.C.; CORRER SOBRINHO, L.; SINHORETI, M.A.C.; CONSANI, S. - (UNIDERP e FOP/UNICAMP)**

The aim of this paper was to evaluate diametral tensile strength of RM-GIC Vitremer (3M dental products ) and Fuji II LC (GC COrporation), in 1:1, 1:2 and 1:3 p/l ratios, after 1, 7 and 28 days of storage in distilled water at 37ºC. For each material, P/L ratio and time of storage, 5 specimens were produced, in silicon moulds, with 4 mm in diameter by 6 mm in heigth. Each end was photoactivated for 40 seconds and, after removed from moulds, specimens were photoactivated laterally for 40 seconds. Their surfaces were protected according to manufacturer's recommendations, and specimens were immersed in distilled water. Diametral tensile strength tests were performed at 0.5 mm/min. in an Instron Universal Tests Machine. Values obtained for Vitremer, in MPa, at P/L ratio1:1, 1:2 e 1:3 were, respectively: (37.34; 23.53 and 18.81) after 1 day of storage; (39.27; 21.41 and 17.47) after 7 days of storage, and (39.03; 18.26 and 19.89) after 28 days. For Fuji II LC, values in MPa, in P/L ratios 1:1, 1:2 and 1:3 were (24.70; 15.56 and 17.81) after 1 day of storage; (18.63; 18.61 and 9,.7) after 7 days and (23.73; 26.55 and 18.61) after 28 days. P/L ratio variation influenced the diametral tensile strength of both materials, Vitremer and Fuji II LC, but time of storage influenced only Fuji II LC.

**79- Effects of thermocycling on microleakage of composite resin restorations with self-etching adhesives. TEIXEIRA, C.S.; ANDRETTI, F.L.; MAIA, H.P.; CHAIN, M.C. Universidade Federal de Santa Catarina, Depto. de Estomatologia, Florianópolis, Santa Catarina**

The purpose of this in vitro investigation was to verify the microleakage in freshly-extracted bicuspids restored with composite resin (Clearfil AP-X, Kuraray, Japan), using two self-etching adhesives, Clearfil SE Bond, Kuraray, Japan (CF), and One-up Bond F, Tokuyama, Japan (OB), and to assess the effects of the thermocycling and water storage for 30 days. Class V cavities were prepared on the labial and lingual surfaces of 27 human teeth with gingival wall in cement. The labial cavities were treated with CF and the lingual cavities with OB (same composite resin -Clearfil AP-X). After 24 hr storage in water and heat owen at 37º C, the restorations were polished, and the teeth were divided in three groups: Group 1 (distilled water and heat owen at 37º C, 30 days); Group 2: thermocycling (800 cycles; 5 – 55º C; 30s each); and Group 3: control (no additional treatment). The specimens were coated and embedded in 2% blue methylene (pH = 7.0) for 8 h. The specimens were sectioned, photographed and the pictures digitized. After calibration, three examiners scored the microleakage at the resin/occlusal and resin/gingival wall interfaces. The Kruskal-Wallis statistical analysis ($p<.05$) established that regardless of the adhesive, gingival leakage scores were significantly higher than the occlusal ones ($p<.0001$); both storage in water for 30 days and thermocycling increased the scores; and dye penetration was lower in the cavities treated with CF ($p<.0001$), although no significant difference has occurred for Groups I and II for gingival scores.

**80- Effect of different dyes and immersion time on microleakage of resin composite restorations. PAZINATTO, F.B.; WANG, L.; LAURIS, J.R.P.; ATTA, M.T. (Faculdade de Odontologia de Bauru - USP, S.P.)**

The aim of this study was to evaluate microleakage methodology of an adhesive restorative system using different dyes. Two null hypotheses were formulated: 1- there is no difference on penetration of different dyes; 2- immersion time does not influence microleakage. Class V cavities (3 x 3 x 1.5 mm) were cut in 30 bovine teeth with coronal dentin margins. Cavities were restored with Single Bond system (3M-ESPE) and Z250 resin composite (3M-ESPE) inserted in two diagonal increments. After 7 days, restorations were finished and polished with sequential granulation discs (TDV) and, teeth were divided in 6 groups: G1- 0.5% basic fuchsin for 4 h, G2- 0.5% basic fuchsin for 24 h, G3- 2% buffered methylene blue for 4 h, G4- 2% buffered methylene blue for 24 h, G5- 2% methylene blue for 4 h and, G6- 2% methylene blue for 24 h. Restorations were sectioned and the most infiltrated sections were selected to determine dye penetration (millimeters) with a computer program (ImageTool, UTHSCSA). Statistical analysis (two-way ANOVA and Tukey, a=0.05) showed no significant effect of immersion time on microleakage ($p>0.05$). However, microleakage among dyes was statistically different, with greater penetration for the groups with buffered methylene blue (G3- 2.63 ± 1.22; G4- 3.40 ± 1.51), followed by basic fuchsin (G1- 2.01 ± 0.60; G2- 3.47 ± 1.15) and methylene blue (G5- 1.45 ± 1.03; G6- 1.56 ± 0.63). Hypothesis 1 has to be rejected and hypothesis 2 accepted: different dyes influenced microleakage penetration along the evaluated adhesive interface and immersion time did not influence dye penetration.

**81- Comparative microleakage evaluation of mechanical loaded composite restorations. SCHNEIDER, L.F.J.[1]; MUNDSTOCK, G.V.[2]; MILAN, F.M.[2], CONSANI, S.[1] (1- Faculdade de Odontologia de Piracicaba, UNICAMP, Piracicaba, SP; 2 – Universidade de Santa Cruz do Sul, UNISC, Santa Cruz do Sul, RS)**

The aim of this study was to evaluate the mechanical load influence at the marginal leakage, in enamel and cement, with composite restored teeth. Forty bovine incisors were allocated in four groups (n=10): I – Z250 composite restored teeth (Single Bond adhesive system); II – Charisma composite restored teeth (Gluma One Bond adhesive system); III - Charisma composite restored teeth (Gluma One Bond adhesive system), 1,000 cycles loaded (10 Kf each cycle); group IV - Z250 composite restored teeth (Single Bond adhesive system), 1,000 cycles loaded. The class V restorations were located at cement-enamel junction and the load was applied on the incisal edge. During mechanical loading, the samples were immersed in 2% buffered methylene blue. The samples were cross-sectioned and the infiltration degrees, in score, were evaluated with stereomicroscope. A different substrates analysis did not show statistical differences. Enamel and cement comparison showed enamel better results (enamel/cement medium post: group I, 28.05/61.00; II, 31.40/50.40; III, 16.00/47.00 and IV, 33.75/55.70).Mechanical load cause statistical differences, at the marginal leakage, when enamel versus cement were compared.CNPQ

**82- Influence of storage/aging methods on microleakage. BAUER, J.R.O.; DE GÓES, M. F.; BARROSO, L. P.; GRANDE, R. H. M.. - School of Dentistry – USP and UNICAMP and IME -USP**

This study aimed to evaluate some variables such as storage/aging methods on microleakage (constant or alternate temperature; contact with water and storage period) on the microleakage of an adhesive system applied on contaminated enamel. After acid etching, 120 occlusal surfaces of molars were sealed with OptiBond dual cure®, activacted in the ramp mode by means of a light unit Optilux 501®. The sample was then divided into 16 experimental groups (n=6) and 1 control group (n=12 - not subjected to any of the storage/aging method). Half of the sample was irradiated with Nd:YAG laser (40mJ; 10mHz; 0,6 W e 60s), soon after the sealing. The storage/aging was performed for 20 days in 5, 37, 55 and 5-55ºC (200 cycles a day) under or not water contact. After the performance of $AgNO_3$ technique, the specimens were sectioned, the leakage measured and the mean values were subjected to ANOVA. The microleakage was not influence by laser application ($p=0.95$). The control group showed microleakage, i.e., even when the leakage was performed immediately, the adhesive interface was not ideal. The interaction water and storage/aging methods was significant ($p=0.022$), as well as the lowest degree of microleakage in the group without water contact at 5ºC ($p<0.001$). It can be concluded that the effects of storage, water temperature and the direct contact with water still deserves further evaluations in order to define their real effect on microleakage evaluations. This study was approved by the Ethics Committee and supported by CNPq 300086/01-6.
Approved by CEP/FOUSP.
Grants: CNPq 300086/01-6.

**83- Effect of intracoronal agents bleaching on glass ionomers. SANTOS, M.C.M.S; ASFORA, K.K; MONTES, M.A.R.J; LYRA, L.C; BARBOSA, A.C.C**

The purpose of this study was to evaluate the sealing ability of cervical endodontic seals made with glass ionomer cements (Vitremer 3M; Ketac Fil- ESPE) according to the following situations: conventional x resin-modified glass ionomer and with light activation x without light activation, to prevent cervical endodontic leakage. Sixty one-root human teeth, extracted by periodontal indication, were selected. After cleaning and disinfecting, the teeth were endodontically treated and stored in physiological solution for 30 days. Fifteen teeth were randomly chosen and reserved as the control group, the other roots were emptied 3 mm below cement-enamel junction for the placement of a cervical seal made with each of the materials: (Group1–Ketac Fil); (Group2–Control group – No cervical seal, only endodontic sealing); (Group 3 – Vitremer with light activation); (Group 4 – Vitremer without light activation). Twenty-four hours after placement of the cervical seal, the teeth were filled with a sodium perborate/water paste and the canal access was sealed. Specimens were thermocycled in a water bath 150 times between 5°-60° C. After five days, the bleaching agent was changed and the specimens were again thermocycled. On the eleventh day, the teeth were emptied, rendered impermeable with acrylic resin and two coats of nail varnish and immersed in a 5% fuchsin solution for 24 hours. The teeth were longitudinally sectioned and prepared for stereomicroscopic examination (40X).The leakage degrees were evaluated by three standard examiners. The data were submitted to Kappa and Kruskall-Wallis test at 5% level of significance. The results showed a good agreement among the examiners and statistical differences between the groups 1 and 2; 1 and 4 as well as groups 3 and 2; 3 and 4.The results indicated that the control group (only endodontic sealing) showed the best seal effectiveness and between the glass ionomer cements, Vitremer without light activation presented the best seal ability.

**84- Microtensile bond strength of self-etching adhesive systems to dental enamel. OLIVEIRA, M.T.;SHINOHARA, M.S.;HIPÓLITO,V.; DE GOES, M.F.; RUEGGEBERG, F.A.; GIANNINI, M. (Faculdade de Odontologia de Piracicaba – UNICAMP).**

The aim of this study was to evaluate the microtensile bond strength (mTBS) of two self-etching adhesive systems and one acid etching system to ground enamel. Nine freshly-extracted third molars were sectioned mesio-distally. Teeth were divided into 3 test groups (n=6): G1 - Single Bond (SB - 3M ESPE), G2 – Opti Bond Solo Plus (OP - Kerr) and G3 - Tyrian (TY - Bisco). After randomizing the specimens, buccal and lingual surfaces were flattened with 600 grit SiC paper, and restored with Single-Bond, Opti Bond Solo Plus and Tyrian adhesive systems according to the manufacturers' instructions. After application of the adhesive resins, a composite block of approximately 8 mm was built up with Clearfil APX composite resin (Kuraray). Restored teeth were stored in distilled water for 24 h and, afterwards, specimens were serially sectioned in the occlusal-cervical direction to obtain 0.8 mm slabs. Each slab was trimmed to an hourglass in order to obtain a cross-sectional area of approximately 0.8 $mm^2$ at the bonded interface. Specimens were tested in tension in an universal testing machine (0.5 mm/min - Instrom 4411). Results were statistically analyzed by ANOVA and Tukey test (5%). There were statistically significant differences on mean bond strengths among groups (MPa): G1 - 24.1 ± 5.53a, G2 - 4,25 ± 1.30c, G3 - 7,40 ± 2.98b. Results suggest that phosphoric acid etching significantly increase the mTBS to enamel. Supported by FAPESP-01/13034-3.

**85- Antibacterial and conventional self-etching primer system: Bond strength and morphology of intact and ground Primary Enamel- DARONCH, M.[1]; DE GOES, M. F.[2]; DI HIPOLITO, V.[2]; GIANNINI, M.[2] ([1]FOUSP, [2]Faculdade de Odontologia de Piracicaba – UNICAMP)**

This study compared the effect of an antibacterial self-etching primer system(ABF-ABF experimental system), a conventional self-etching primer system(SE-Clearfil SE Bond) and a one bottle adhesive system (SB-Single Bond) applied on intact and ground primary enamel by means of microtensile bond strength (mTBS) and SEM evaluation. Twenty sound primary human molars were used. Half were ground flat with SiC paper to exposure cut enamel and the other half were left intact. Teeth were processed for SEM analysis of enamel surface, resin reproductions and adhesive interface.
Bonded specimens were prepared with Z250 (3M ESPE) for mTBS test. After 24 hours, glass-hour shape specimens were obtained (average bonded area of 0,7 $mm^2$) and stressed to failure. Data were analyzed by two-way ANOVA and Tukey test ($p<0.05$). The mTBS values are described below. SEM observations showed that etching patterns of enamel varied according to adhesive tested and enamel preparation. Both self-etching primers systems produced mild etching pattern that were enhanced at ground surface. Phosphoric acid produced typical etching pattern regardless tooth substrate.
Groups identified with the same subscripts are not significantly different ($p<0.05$)

μTBS in MPa(mean±SD)

| | Intact Enamel | Ground Enamel |
|---|---|---|
| ABF experimental system | $15,73(2,12)_{b}$ | $18,92(3,32)_{b}$ |
| Clearfil SE Bond | $15,36(4,32)_{b}$ | $19,21(2,99)_{b}$ |
| Single Bond | $27,83(5,47)_{a}$ | $21,08(3,14)_{a,b}$ |

Surface preparation had no influence on mTBS of primary enamel. ABF showed similar morphology and bond strength to SE, lower than SB at intact surface.(Supported by CAPES)

**86- Effect of 10% carbamide peroxide on microtensile bond strength between adhesive systems and dental substrates. CAVALLI, V.; CARVALHO, R.M.; GIANNINI, M. (Piracicaba Dental School, UNICAMP, Piracicaba, SP and Bauru Dental School, USP, Bauru, SP).**

This study evaluated tensile bond strength (TBS) of two adhesive systems applied on enamel and dentin after 10% carbamide peroxide bleaching (Opalescence 10%/ Ultradent – OP) on bond interface. Sixteen third human molars were used. Eigth of them, were restored on medium depth dentin (D), after abrading the occlusal surface. In the other half, restorations were made on occlusal enamel (E) surface. Two adhesvie systems were applied on the dental tissues according to manufactures´ instructions: Single Bond (3M/ESPE- SB) Clearfil Bond SE (Kuraray- CF). A "cube-like" composite resin structure (TPH Spectrum-Dentsply) was incrementally built on the prepared surfaces. The structure was was sectioned in a buccal-lingual direction in slices approximately 0.7 mm thick. In each slice, trimming was carried out at the central bond to obtain a cross-sectional area < $1mm^2$. On the cross-sectional area samples were treated or not with the bleaching agent according to the experimental groups (n=10): (1) E + CF; (2) E + CF+ OP; (3) E + SB; (4) E + SB + OP; (5) D + CF; (6) D + CF +OP; (7) D + SB; (8) D + SB + OP. Groups 2,4,6 and 8 received the bleaching agent application for 6 hours at 37°C during 14 days. After bleaching samples were stored in 10 ml of remineralization solution. Groups 1, 3, 5 and 7 remained immersed in 10 ml of remineralization solution for 14 days. Microtensile bond strength test was conducted in an universal testing machine (0,5mm/min). Results were analized by two-way ANOVA and Tukey ($p<0,05$). Mean values were (MPa): (1)$27,6^{d}$; (2)$20,4^{e}$; (3)$41,2^{a}$; (4) $35,3^{b}$; (5) $30,1^{cd}$; (6) $28,3^{d}$; (7) $32,2^{bc}$; (8) $30,8^{cd}$.The results suggest that bleaching applicaton on the adhesive system-enamel bond reduced TBS for both adhesive systems. (CAPES, FAPESP # 01/02771-7)

**87- Shear bond strength of different materials applied to enamel. BORGES, A.F.S ; LOPES, D.O.; CORRER, G. M.; CALDO-TEIXEIRA, A.S. ; PUPPIN-RONTANI, R. M. (Áreas de Odontopediatria e Materiais Dentários - FOP/ Unicamp).**

Objective: To evaluate the shear bond strength of different materials applied to enamel of permanent teeth. Thirty sound third molars were extracted, stored in 1% thymol solution and mesio-distally sectioned. These sections were embedded in polystyrene resin and the enamel sandpapered to obtain a horizontally flat surface and filled with the following materials according to manufacturers´ recommendation (n=10): Resin Selants (RS) - FluroShield (F) e Clinpro (CI); Compomers (C) - F2000 (F2) e Dyract AP (D); Glass Ionomer Cements (GIC) - Fuji IX (FI) e Vidrion R (V); Glass Ionomer Cements Modified by Resin (GIR) - Vitremer (VR). The specimes were stored (100% humidity/$37^{0}$C-24h) and subjected to shear test in Instron with 0,5 mm/min speed. The data were transformed to MPa and subjected to Kruskal-Wallis test ($p<0,05$). RESULTS: The higher mean (MPa) were observed for F (18,2±14,5), VR (16,3±14,6), D (13,7±9,1) and C (12,8±8,4), followed FI (6,1±3,9) and F2 (6,1±5,2). The V showed the lower shear bond strength means. No differences were observed among the materials of the same group. The lower shear bond strength were found for V and the higher for F, VR, D e C.

**88- Microtensile bond strength of self-etching adhesives to intact and ground enamel surfaces. HIPÓLITO, V.D.; DE GOES, M.F.; SINHORETI, M.A.C.; GIANINNI, M. Faculdade de Odontologia de Piracicaba, UNICAMP, Piracicaba – SP.).**

The purpose of this study was to evaluate the microtensile bond strength of self-etching adhesives (Prompt L-Pop [PLP-3M/ESPE], Clearfil SE Bond [SE-Kuraray] and Adper [AD-3M/ESPE]), compared to Single Bond adhesive (SB-3M/ESPE) in intact (I) and ground enamel (G). Twenty extracted human molars were sectioned on the buccolingual direction. Half of them had the enamel roughened with wet 600-grit silicon carbide paper and the other half was left unprepared. Adhesives were applied according the manufactures' instructions and a "crow" was incrementally built up with Z250 (3M/ESPE) composite resin and light cured (XL 3000/3M Dental Products Division, St. Paul, MN USA). Specimens were sectioned vertically in a saw machine (Buehler – Isomet 1000) to obtain slabs of 1mm thickness. Each slab was trimmed with a diamond bur at the adhesive interface, giving a cross sectional area of $1mm^2$. The fracture patter was evaluated under a Scanning Electron Microscopy (SEM- JEOL-5600 LV, Japan). Two way ANOVA and Tukey test ($p<0.05$) was performed to identify statistical differences. Mean (MPa) and standard deviation of the bond strengths were: SB/I-23.8(±8.08); SB/G-24.5(±7.12); PLP/I-23.7(±4.01); PLP/G-27.5(±5.11); AD/I-20.4(±5.72); AD/G-20.8(±5.54); SE/I-17.1(±5.03); SE/G-17.9(±3.09). Most of the fracture modes were classified under a SEM as cohesive failure within resin and enamel with preservation of the interface between enamel and resin. The bond strength of self etching adhesives systems was similar to or lower than SB system and the values were not statistically different in intact and ground enamel

**89- Influence of the specimen size and the regional variation on the longevity of the adhesion to dentin UCEDA-GÓMEZ, N.; LOGUERCIO, A.D.;CARRILHO, M.R.O.; REIS, V. (Faculdade de Odontologia da Universidade de São Paulo, USP, São Paulo, S.P.).**

This study investigated whether bonded specimen dimensions, stored prior microtensile testing, and its regional origin (peripheral or central) affect the long-term bond strength to dentin. It was used extracted human third molars (36) that had a flat dentine surface exposed. Single Bond (SB) or One-Step (OS) adhesives were employed as recommended by manufacturers and composite resin buildups were constructed incrementally. The teeth were distributed according to the following 3 groups: IM-After 1 day in water at 37°C, the teeth were prepared for microtensile bond testing, and the resultant sticks ($0.8mm^2$) were immediately tested; 6M-After 6 months of storage in water at 37°C, the teeth were prepared for microtensile bond testing and immediately tested; S6M-After 1 day in water at 37°C, the teeth were prepared for microtensile bond testing, stored in water for 6 months and tested. Regional origin of each stick from IM and S6M groups were considered. The data were analyzed by ANOVA and Tukey's test (a=5%). It was found for SB system, the highest bond strength value was observed to IM group, which was statistically different of others. 6M and S6M results were statistically similar. For OS the highest bond strength value was also observed in IM, followed by 6M and S6M ones. Significant differences were detected among groups. Sticks from peripheral region and tested after 6 months had a significant decrease of bond strength, regardless the material. Long-term bond strength was affected significantly either by bonded specimen dimensions or by their regional origin.

**90- Experimental methanol-based adhesives as alternative agents for producing stable resin-dentin bonds. MANSO, A.P.; CARRILHO, M.R.O.;TAY, F.R.; PASHLEY, D.H.; CARVALHO, R.M. Bauru School of Dentistry USP- Brazil, University of Hong Kong- China, Medical College of Georgia- USA**

The purpose was to determine the bond strength (BS) of experimental methanol-based adhesives to dentin after storage in water. The adhesives were prepared from mixtures of a relatively hydrophobic low viscosity bonding resin, Scotchbond MP Plus (#3, 3M ESPE) with 30%, 50% or 70% methanol (v/v). Flat dentin surfaces were exposed and polished with 600-grit SiC paper, etched with 35% phosphoric acid for 15s and washed for 20s. The adhesives were applied to either moist or air-dried (30s) dentin, left undisturbed for 90s to allow solvent evaporation and light-cured for 20s. Resin composite build-ups were constructed incrementally with Z 250 resin composite (3M ESPE) and the bonded teeth stored in water at 37ºC for 24 hours. Subsequently, the teeth were sectioned into 0.8 $mm^2$ beams and tested with the microtensile method at 0.5 mm/min. Part of the specimens were tested immediately after sectioning (24 hr), while the remaining were tested after 6 months of storage in water at 37ºC. Data were analyzed by ANOVA and Student-Newman-Keuls at a = 0.05. Results are MPa ± DP(N).

| MATERIAL | 24 H | | 6 MON. | |
|---|---|---|---|---|
| | WET | DRY | WET | DRY |
| 30% METHANOL | 11.43 ± 4.16 (9) | 8.17 ± 4.31 (11) | 7.42 ± 3.25 (11) | 3.86 ± 2.09 (9) |
| 50% METHANOL | 10.86 ±4.65 (12) | 8.45 ± 5.41 (10) | 7.34 ± 2.42 (20) | 4.70 ± 1.87 (16) |
| 70% METHANOL | 12.80 ± 4.68 12) | 7.60 ± 2.69 (13) | 7.55 ± 3.16 (15) | 5.22 ± 3.02 (19) |

No effect of solvent concentration was detected for both experimental factors ($p>0.05$). Higher BSs were obtained with wet-bonding technique, regardless of the solvent concentration ($p>0.05$). Water storage for 6 months significantly reduced BS for all experimental conditions ($p<0.05$). The BS was dependent on bonding technique and storage time, however, was independent on solvent concentration. Supported by CAPES, CNPq 300481/95-0, 474226/03-4 and NIDCR DE 014911.

**91- Influence of water storage time on microtensile bond strength of two dentin-bonding agents. LODOVICI, E.; SADEK, F. T.; MUENCH, A.; RODRIGUES FILHO, L. E.; CARDOSO, P. E. C. (Faculdade de Odontologia da Universidade de São Paulo, São Paulo, S.P.)**

The purpose of this project was to study the influence of the storage time (24h and 3 months) and of dentin regional variation in the bond strength of two adhesive systems to dentin, a one–bottle, Single Bond (SB) and a self-etching primer one, ABF experimental (SE). Sixteen human third molars had their occlusal enamel removed in order to expose a flat dentinal surface, in which a smear layer was created by sand paper of decreased granulations. After the adhesive procedures were carried out, 5 mm height blocks of composite resin Z250 were built. The teeth were divided into four groups (n=4), according to the employed adhesive system and storage time in distilled water at 37°C: A)SB 24 hours; B)SB 3 months; C)ABF 24 hours; D)ABF 3 months. After aging, the teeth were longitudinally sectioned into perpendicular directions in order to obtain parallelogram-shaped specimens with a cross-sectional area of 0.8 $mm^2$ and constituted by resin-adhesive-dentin. Each test specimen was plotted with different colors of nail polish, according to its localization in the teeth: peripheral or internal, in the horizontal direction, and submitted to microtensile test. The data were submitted to ANOVA and Tukey test ($p>0.05$), which revealed no differences between bonding strength means of both adhesives with different storage age, and between different regions of the teeth.

**94- ABSENT**

**92- In vivo vtudy of incompletely infiltrated acid-etched vital dentin, using TEM MOURÃO, R.L.*; LANZA, L.D.*; TAY, F.R.***; MANSUR, H.S.**(Federal University of Minas Gerais, *Faculty Dentistry, ** University of Metallurgy and Material Engeneering ***Hong Kong, Faculty of Dentistry**

Sites of incomplete resin infiltration in acid-etched dentin expedite water sorption, leaching of hydrophilic resin components, or hydrolytic degradation of the denuded collagen matrices that subsequently result in deterioration of these bonds after aging. Akimoto et al. (Quintessence Int 2001; 32:561-570) recently reported that these sites can be remineralized in vivo in primate teeth after a 6-month period. The objective of this study was to validate these findings using in vivo human specimens. Methods: Unexposed, buccal class V preparations with enamel cavosurface margins were performed in 10 human premolars scheduled for orthodontic extractions, under a protocol approved by the ethical committee, of FUMG, Brazil. The samples were acid-etched with phosphoric acid for 60 s and then moist-bonded (over-etched group OE), to create zones of incomplete resin infiltration within the acid-etched dentin. The cavities were bonded using Single Bond (3M) and restored with Protect Linner F (Kuraray). Half of the restored specimens were retrieved after 10 mins, and the other half at 6 months and examined with TEM. Results: Stained, demineralized sections revealed 13mm thick hybrid layers in OE. Incompletely infiltrated regions within the acid-etched dentin were identified by zones of the extensive silver deposition from unstained, undemineralized sections. Similar zones were seen in 10 min and 6-month specimens, with no ultrastructural evidence of apatite deposition within the hybrid layers. Conclusion: It is concluded that incompletely infiltrated, acid-etched vital human dentin did not remineralize in vivo after a 6-month period.

**95- In-vitro bone cell differentiation on processed titanium surface. RAVEE, Y.Z*; TEIXEIRA, C.M.C.; RICCI, J.L. - Department of Biomaterials and Biomimetics. New York University College of Dentistry**

Titanium and its alloys are widely used as dental implant materials because of their high mechanical strength, low modulus of elasticity, light weight and good corrosion resistance. The main use of titanium is based on previous studies and observations that showed bone healing in close contact with titanium implant surfaces. This healing has been termed osseointegration by some investigators. Previous studies have shown that surface changes influence parameters of cell response. The aim of this study was to compare cell differentiation on several types of titanium surfaces. Sample Preparation: Commercially pure titanium discs were used in this experiment. Three kinds of surface-modification were used for the experiments: including polished Ti surface, RBS prepared, and laser machined prepared. The surfaces of all of the samples were characterized using the SEM (Jeol JSM-5400 scanning microscope). Roughness of the surfaces was measured using Taylor-Hobson (PNEUMO) surtronic 3+ profilometer. Cell Culture: Cellular response to the surfaces Ti was employed primary cells from 18 days chick tibia. The cells were incubated in Dulbecco's Modified Eagle Medium (DMEM) supplemented with 10% FBS, penicillin (100units $ml^{-1}$) and streptomycin (100mg $ml^{-1}$) in an atmosphere containing 5% $CO_2$ at $37^0$C. Ten samples of each surface modified Ti group including the control group were sterilized in alcohol (75%) and placed individually into 6-well plate were each were inoculated with $10x10^4$ of primary chick tibia cells.Cell growth were observed/ monitored using phase-contrast microscopy. Various biochemical assays were preformed, Alkaline phosphatase. This study was done in order to examine cellular response to titanium surfaces. Our studies have shown that the cells grown on a laser microtextured surface yield an increase in Alkaline phosphatase levels. The cells prefer to grow on the laser surface due to an increase of surface area.

**93- Influence of hypermineralization and type of dentin bonding agent in adhesive interfaces. RAUSCHER, F.C.; MOLLICA, F.B.; RODRIGUES, F.P.; PAIVA, S.E.P. - Dep. Odontologia Restauradora - FOSJC-UNESP**

The present study investigated the quality of the adhesive interfaces in hypermineralized and normal dentin following the application of a self-etching and conventional bonding agent. Forty bovine incisors were selected and divided in half mesio-distal sections, which were worn until 1,5mm dentin thickness. The specimens were separated into two groups: (N) normal dentin, which was kept in distilled water at 37ºC and (H) the hypermineralized, in hypermineralizing solution at 37ºC for 14 days. Each group was divided into two subgroups according to the type of bonding agent used (n=20): S (acid etching + Single Bond, 3M) and O (One Up-Bond F, Tokuyama). A composite resin (Tetric Ceram, Vivadent) was bonded to the dentinal surface and the resin-dentin interfaces were analyzed using SEM after polishing, acid/base challenge and protocol preparation for electron microscopy. Scores (0-3) were attributed for degree of sealing or gap and porosity presence. Kruskal-Wallis, Dunn and Fisher's tests (a = 5%) determined the better interaction for ON group and, in H dentin, both adhesive agents did not demonstrate resistance to chemical treatment. The results suggested that: a) normal dentin with application of the self-etching adhesive system is efficient in achieving higher resistance of the hybrid layer and it is promising as a possible substitute for conventional adhesive system; b) further studies should be done in improving the practical interactions of bonding systems in hypermineralized dentin.

**96- Etiologic factors reported to dental sensitivity happens in adhesive aesthetic dentistry. SANTANA, T.D.*; VASCONCELOS, J.K.O.S. ** (* Faculdade de Odontologia da Universidade de Itaúna, ** Faculdade de Odontologia da Puc-Minas, Belo Horizonte, MG).**

The aesthetic restorative procedures have been constantly demonstrating a disadvantage: post-op sensitivity. Therefore, in this work we have chosen to discuss the causes quoted in the literature as the etiologic factors of the post operatory sensitivity, as well as the possible ways of preventing it from happening. Among the many factors that have been assessed, the most relevant ones are: trauma during the preparation, quality and quantity of available dental substrate, hibridization failures, occlusion, polymerization shrinkage of the composite based materials, bacterial microleakage and toxicity of the dental materials. It was concluded that the post-op sensitivity in adhesive aesthetic dentistry can be attributed to many factors and can be prevented once the dental professional sticks to the precision of all steps of the adhesive techniques, as well as has proper knowledge of dental material properties, dentinal substrate and inner causal reactions.

**97- Porcelain aesthetic veneers: a clinical case report. CONEGLIAN, E.A.C.; AZEVEDO, J.F.D.G.; MONDELLI, R.F.L.**

In this early millennium, where the aesthetic factor has become a constant necessity, both the industries of dental materials and researchers are committed to the development of new technologies and products, in order to supply this demand. More and more, attempts are made, based on the principles of Biomimetics, to develop materials that reproduce not only the aesthetic characteristics of the teeth, but also their physical and biological properties. Moreover, the porcelain aesthetic veneers, recommended for the treatment of defects and color changes in the anterior teeth, through the improvement of adhesive restorative systems obtained in the prominent settings, where with the minimum wear of the dental structure, present a conservative functional aesthetic solution, providing maximum performance. The ideal surface characteristics, their optimal hardness, besides the bio-mechanic strength of dental porcelains, achieved through their association with the adhesive systems, enable the dental crown, as a whole, to support the incisal and masticatory functions for a long period of time. This paper presents a clinical case accomplished in a 35-year old female patient with intense social activities. The previously performed treatments did not solve the disharmony of the smile. One observes that the pigmentation through tetracycline was not corrected by the bleaching of the arches, nor by the direct veneers in the upper arch. With the accomplishment of six porcelain aesthetic veneers in the antero-superior teeth, the aesthetic functional needs were supplied, providing the patients with a higher self-esteem and greater social integration.

**98- Bleaching of vital teeth through photosensitive agents. AZEVEDO, J.F.D.G. DE; CONEGLIAN, E.A.C.; ASENJO-MARTINEZ, M.A.J.; MONDELLI, R.F.L. (Faculdade de Odontologia de Bauru, USP, Bauru, S.P.).**

With emphasis on an aesthetic dentistry, there was, in the last decade, a marked evolution in dental bleaching due to the introduction of new bleaching agents and equipments that present new techniques, formulations, concentrations of the bleaching agent and varied light sources for the agents' activation. The purpose of this literature review is to evaluate the different activation forms for the photosensitive agents utilized in the bleaching of vital teeth in the clinic and its probable effect on the dental structures and adjacent tissues. Seven light apparatuses will be described with the specific bleaching function: the sources of halogen light; plasma arch with xenon lamp; LED associated with the diode laser; argon laser and diode laser, by comparing among them the wavelength, potency density, irradiance, type of light generating unit and time of application recommended by the manufacturer. As an illustration, a clinical case will be described, demonstrating the clinical bleaching technique in a single session, using the LED light source associated with the diode laser (Whitening Lase–DMC Equipamentos), and hydrogen peroxide at 35% as a photosensitive agent (Whiteness HP – FGM Produtos Odontológicos). The differences among these variables can determine, in a varied way, the postoperative sensitivity due to the increase of temperature of the bleaching gel and pulpal intra-chamber, and may even determine enamel alterations relation to the wear and superficial roughness.

**99- Post retention: influence of eugenol-contaning and eugenol-free root canal sealers combined with resinous luting cements. BODANEZI, A.; BERNARDINELLI, N.; MORAES, I.G. – Bauru Dentistry School/University of São Paulo**

The main objective of this study is to present a literature review about the possibilities of chemical interaction of eugenol-containing root canal sealers and resin cement luting agents during preformed post cementation. Is a matter of fact that endodontically treated teeth with insufficient coronal tooth structure require radicular posts to assist in restoring the tooth to function. Usually, before and during post-space preparation, the professional must follow some principles in order to assure sufficient retention and correct stress distribution in the root involved.
The discover of dentin adhesive agents has instigated post cementation with resin-based cements once there are reports about 150-200% strength increase in retention when compared to other agents as zinc phosphate and glass ionomer. These results may tend to lead practitioners toward using resin cements when adequate post-space preparation is impossible to be achieved. Today, in root canal treatment, the clinical surgeon may choose to obturate using eugenol-containing or eugenol-free sealers, depending on the usage of desired properties according to each situation. Eugenol and other components are believed to retard resins cement´s polymeric reaction, thus the retention of posts would be negatively affected). If eugenol-containing sealers do result in inferior post retention, alternative sealers might be indicated, at least, when canals will receive subsequent bond procedures.
According to the conditions explained, the obtaining of a clean dentinal surface at the moment of post cementation, with resin-based cement, is more critical to post retention than the non-eugenol endodontic sealer used.

**100- Visual methods of investigation – techniques and applications. LEAL ESMERAL, L.I.[1]; GARCEZ, R.M.V.B[1]; PEREIRA, L.C.G.[2]; FRANCISCONI, P.A.S.[1], PEREIRA, J.C.[1] ([1]Bauru Dental School – USP e [2]Anápolis Dental School – AEE)**

The evaluation of dental materials interaction with dental structures, have been studied by many researches as Pashley, Perdigão, Van Meerbeek and others, even with this microscopic dimension that is difficult to visualize. In purpose to enlarge knowledge, many visual methods evaluation as macroscopic or microscopic are disposable in scientific group therefore some of them are not frequently used because of its complexity and high cost of equipments. Among macroscopic methods are disposable photographs, slides, radiographs and models. In microscopic method can be used light microscopy, polarization microscopy, fluorescence microscopy, electron microscopy (transmission electron microscopy, scanning electron microscopy, confocal microscopy, X-Ray microanalysis, scanning transmission electron microscopy, scanning tunneling electron microscopy, acoustics microscopy, atomic force microscopy) and X-Ray diffraction. Besides there are other methods as finite element analysis and image analysis by computer considered as digital methods. New researches maybe do not use visual analysis as an evaluation method because of difficulty equipment access or simply because of unknowing of their application in dentistry. The purpose of this study is present the more relevant methods of visual inspection and their applications, use technique, advantages and disadvantages. The introduction of these methods to new researches is very opportune if the demystification of possible difficulties and limitations of these methods of evaluation were done. CNPq 140665/2002-1, 140999/99-0.

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