INTERNATIONAL JOURNAL OF PAEDIATRIC DENTISTRY

interscience.wiley.com/journal/ipd



Editor-in-Chief Göran Dahllöf

Abstracts of the 22nd Congress of the International Association of Paediatric Dentistry Munich, Germany, 17–20 June 2009



Volume 19 – Suppl. 1 June 2009

The official journal of The International Association of Paediatric Dentistry The British Society of Paediatric Dentistry



INTERNATIONAL JOURNAL OF PAEDIATRIC DENTISTRY

Abstracts of the 22nd Congress of the International Association of Paediatric Dentistry Munich, Germany 17–20 June 2009

Poster Session P02 - Dental Materials 1

Disclaimer

This abstract book has been produced using author-supplied copy. Editing has been restricted to some corrections of spelling and style where appropriate. No responsibility is assumed for any claims, instructions, methods or drug dosages contained in the abstracts: it is recommended that these are verified independently.



Poster Session P02/Dental Materials 1

P02-18

Fluoride releasing capacity and physical properties of a nano-filled fissure sealant

A. KUSGÖZ¹, <u>T. TÜZÜNER¹</u>, B. KEMER² & O. SARAY³ ¹Department of Paediatric Dentistry; ²Department of Chemistry; ³Department of Mechanical Engineering, Karadeniz Technical University, Trabzon, Turkey

Introduction: The incorporation of nano-particles to the fissure sealant including fluoride (F) promotes better physical properties. The aim of this comparative in-vitro study was to investigate the F releasing capacity, Vickers surface microhardness (VHN) and degree of conversion (DC) results of nano-filled, un-filled resinbased and glass ionomer-based fissure sealants.

Materials and methods: Forty-five disk shaped specimens were obtained from Grandio Seal (GS, nano-filled), ClinPro (CL, un-filled) and Fuji Triage (FT, glass ionomer) using teflon molds (5-mm diameter, 2-mm depth). After polymerization with light curing unit, specimens were stored in dark environment for 24 h at 37°C. The F concentration was measured at 1, 6, 12 h and 1, 4, 7, 15, 30 days by Ion Selective Electrode. The VHN values were measured with microhardness tester under a load of 1 kg/20 s, the DC (%) was studied with FTIR. All data were analyzed with one-way ANOVA, *post hoc* tests at a significance level of 0.05.

Results: The cumulative amounts of F ions released from FT were significantly greater than CL and GS (P < 0.05) while no significant differences were observed between the CL and GS during all study periods (P > 0.05). The VHN values were significantly different between all groups in the following order GS > FT > CL, respectively (P < 0.05). The results revealed significant differences regarding DC(%): FT (89%) > GS (55.02%) > CL (%51.10) between all groups (P < 0.05).

Conclusion: Comparing to the other tested materials, nano-filled resin based fissure sealant might be considered as a convenient material regarding its fluoride content and promising physical properties under these *in vitro* conditions.

P02-19

Microleakage and penetration ability of different sealants

L. ZHAO & Q. SHI

Capital Medical University School of Stomatology, Beijing, PR China

Introduction: This *in vitro* study compared the microleakage and penetration ability of different types of sealants.

Materials and methods: Forty extracted sound human third molar teeth were randomly divided into four groups with ten teeth each. The experimental groups were: (1) Concise sealant (unfilled resin sealant); (2) Clinpro sealant (low filled sealant); (3) FluroShield sealant (highly filled sealant); (4) Ionosit-seal sealant (compomer sealant). After sealing, specimens were thermocycled ($500 \times 30s$, 5 and 55 [degrees] C cycles) and then immersed in 5% methylene blue for 24 h. The samples were examined by a stereomicroscope (×40 magnification) after sectioning. The following parameters were evaluated: Microleakage, sealant penetration depths, and fissure type.

Results: The results of microleakage depth were: (1) $325.54 \pm 203.34\mu$ m; (2) $307.56 \pm 200.56 \mu$ m; (3) $348.89 \pm 206.57 \mu$ m; (4) 202.84 ± 201.54 . The results of microleakage rate were: (1) $50.22 \pm 26.73\%$; (2) $43.63 \pm 27.39\%$; (3) $51.57 \pm 30.09\%$; (4) $27.16 \pm 24.42\%$. The results of sealant penetration rate were: (1) $65.94 \pm 24.42\%$; (2) $69.94 \pm 23.54\%$; (3) $74.93 \pm 22.51\%$; (4) $74.44 \pm 23.58\%$. And the results of sealant penetration rate were: shallow fissures $91.62 \pm 14.86\%$; deep fissures $56.84 \pm 16.83\%$. Independent-Samples *t*-test showed Ionosit-seal sealant had significantly less microleakage than all the other sealants tested, and no statistically significant differences were observed between four groups for the sealant penetration depths. The penetration of all sealants was higher in shallow than in deep fissures.

Conclusion: Based on the results of this study, it can be concluded that compomer sealant showed significant less microleakage than resin sealant, and Sealant penetration ability was significantly influenced by the fissure type, not the sealant type.

P02-20

Inhibition of mutans streptococci adherence to salivatreated hydroxyapatite by new enamel coating material <u>S. AIZAWA¹</u>, E. FUKUMOTO³, A. YAMADA¹,

N. TAKAHASHI² & S. FUKUMOTO¹

¹Division of Pediatric Dentistry; ²Oral Ecology and Biochemistry Tohoku University Graduate School of Dentistry, Sendai; ³Division of Preventive Dentistry, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

Introduction: Adherence to the tooth surface and the subsequent biofilm formation by oral bacteria is an important step in the initiation of dental caries. It is necessary to develop new products, not only restorative materials for the cavity but also materials for preventing dental caries. This study aimed to examine the effects of a newly designed enamel coating material containing pre-reacted glass-ionomer (PRG) filler on bacterial adherence to hydroxyapatite (HA) and acid production.

Materials and methods: *S. mutans* and *S. sobrinus* were anaerobically grown in a tryptone-based complex medium containing sucrose in the presence of a saliva-pretreated HA disc with or without being coated with a material containing PRG at 37° C for 48 h. After incubation, the HA disc was taken out of the medium, washed twice with potassium phosphate buffer, and the biofilm formed on the disc was removed using a vortex mixer. Bacterial adherence to the disc was evaluated by determining the optical density. The bacterial culture pH was also measured. Statistical analysis was performed using Mann-Whitney's *U*-test.

Results: Coating materials containing PRG inhibited adherence of mutans streptococci to the HA disc, especially in *S. sobrinus* (OD at 660 nm, noncoat: 0.25 ± 0.11 , PRG-coat: 0.06 ± 0.02 , P < 0.05). Furthermore, this coating material inhibited the decrease of pH caused by streptococcal acid production.

Conclusion: Tooth coating material containing PRG may have a potential role in inhibiting bacterial adhesion to tooth surface and dental plaque formation through suppression of bacterial acid production. Thus, this material may be useful for preventing dental caries.

P02-21

Analysis of GIC clinical procedures knowledge (by questionnaire poll of doctors and students)

E. A. SKATOVA, E. M. NOSOVA, N. A. ANDRONOVA,

L. V. SENINA & I. I. MALANCHUK

Department of Paediatric Dentistry, Moscow State University of Medicine and Dentistry, Moscow, Russia

Introduction: The aim of this study was to evaluate theoretical knowledge of glass-ionomer cements (GIC) working techniques and practical skills in this sphere that doctors and students of Dentistry Department possess.

Materials and methods: A questionnaire was devised on the basis of GIC working techniques as described in literature. For carrying out comparative analysis, the respondents were divided: Group 1–21 paediatric dentists working in state clinics; Group 2–22 pediatric dentists working in private practices; Group 3–20 Dentistry students.

Results: The lowest level of theoretical knowledge and practical skills was amongst dentists of the state clinics, with 70% of answers being incorrect upon average. The questionnaire established that the level of theoretical knowledge and practical skills in private practices was higher than in state clinics. Analysis of responses given by students showed that the average number of correct answers was 70%. The students gave the lowest number of correct answers to questions concerning conditioners and varnishes, indicating a lack of awareness.

Conclusions: 1. All groups surveyed had an insufficient level of knowledge of GIC working techniques. 2. The situation is worst in state clinics, where dentists scored only 35% of correct answers upon average.

3. Dentists in private practices revealed a discrepancy between their level of knowledge (80 % correct answers on average) and the practical aspects of work.

4. Dentistry students are insufficiently informed of the need to condition the prepared cavities before applying GICs and to cover fillings with protective varnishes.

P02-22

Evaluation of microhardness in bovine dentine adjacent to fluoride-releasing restorations

D. ATABEK, M. BANI, N. OZTAS & <u>A. ALTUNTAS</u> Department of Paediatric Dentistry, Gazi University Faculty of Dentistry, Ankara, Turkey

Introduction: The aim of this study was to evaluate the microhardness of bovine dentine following restoration of experimental cavities with four different types of fluoride-releasing restorative materials.

Materials and methods: A conventional glass ionomer cement (Fuji II), a resin modified glass ionomer cement (Fuji II LC), a giomer (Beautifil) and a compomer (Dyract AP) were evaluated in the study. A total of 40 pairs of bovine incisor teeth were used. Two incisor teeth extracted from the same bovine were randomly assigned to control or experimental groups. Forty standard cylindrical cavities were prepared on the labial root surfaces of experimental groups and were restored with each of the tested materials whereas the other tooth used as untreated control. All specimens were individually suspended in distilled water at 37ordm;C for 30 days. The teeth were sectioned and hardness of bovine dentin was assessed by Knoop indentation (20- μ m intervals below the filled surface into the underlying sound dentin from the surface to a depth of 100 μ m). Statistical analysis was performed with two-way ANOVA and Fischer's PLSD test.

Results: A significant difference in microhardness was observed between control and experimental groups of all materials, except for compomer group (P < 0.01). No significant difference was detected between two glass ionomers and giomer groups (P > 0.01) and the average dentin hardness under materials in the studied distances ranged from 83.3 to 61.7, 80.7 to 60.4, 79.9 to 60.8 KHN respectively and that of compomer was ranged from 66.0 to 67.8 KHN. In addition, a significant difference was found between 20 μ m depth and the other depths (P < 0.01).

Conclusion: It is suggested that throughout the study period, dentine showed a similar increase in microhardness values with two glass ionomers and giomer.

P02-23

A new polishing material; nano-technology liquid polish D. ATABEK, H. SILLELIOGLU & A. OLMEZ

Department of Paediatric Dentistry, Gazi University Faculty of Dentistry, Ankara, Turkey

Introduction: The aim of this study was to evaluate the efficiency of a nano-technology liquid polish system on surface roughness of two different types of nano-composite resins.

Materials and methods: Composite resin materials tested in this study were Ceram-X (Dentsply, USA) and Clearfil Majesty Esthetic (Kuraray, Japan). Forty standard samples of each composite resin material were prepared and stored in artificial saliva at 37ordm;C for 1 week. The samples of each material were randomly assigned to one of four test groups (n = 10) and contoured with carbide burs except for Group 1 (control). Samples of Group 2 were treated with aluminum oxide impregnated polymer points (Enhance Finishing System, Dentsply, USA) followed by diamond impregnated micro-polishing points (PoGo, Dentsply, USA), whereas specimens in group 3 were treated with only nano-technology liquid polish system (Lasting Touch, Dentsply, USA) and group 4 was treated in order with aluminum oxide impregnated polymer points, diamond impregnated micro-polishing points and nano-technology liquid polish system. Surface roughness values (Ra) of all samples were obtained with optical profilometer. The significance of difference between groups was assessed with one-way analysis of variance and Kruskal Wallis test. Results: All finishing and polishing techniques created statistically rougher surfaces than the control groups (P < 0.05). The lowest Ra values were detected in Group 4, although significant differences were not found between Group 2 and 4 (P > 0.05)independent from the type of composite resins.

Conclusion: With the combination of finishing and polishing procedures, a nano-technology liquid polish application may provide more glossy surfaces on composite resins.

P02-24

Fluoride uptake from various fluoride-releasing restorative materials by bovine enamel *in vitro*

M. BANI¹, D. ATABEK¹, A. BERKKAN² & N. OZTAS¹ *Faculty of Dentistry, Department of Paediatric Dentistry, Gazi University;* ²*Faculty of Pharmacy, Department of Analytic Chemistry, Gazi University, Ankara, Turkey*

Introduction: The aim of this *in vitro* study was to compare the fluoride uptake from four different types of fluoride releasing restorative materials by bovine enamel and to determine the effect of time on this uptake.

Materials and methods: A conventional glass ionomer cement (Fuji II), resin modified glass ionomer cement (Fuji II LC), giomer (Beautifil) and compomer (Dyract AP) were evaluated. A total of 120 bovine enamel slabs were prepared and assigned to one of four

tested materials. Five slabs of each group were used as controls to determine the baseline fluoride concentration. The remaining slabs were divided into five subgroups representing 5 time intervals (1, 7, 14, 21 and 35 days). Each specimen was attached to the tested material and suspended in synthetic saliva according to the time period. After removal, specimens were etched with perchloric acid and the dissolved enamel was analysed in terms of fluoride and calcium. The amount of fluoride was assessed with direct potensiometric analysis and calcium was determined via atomic absorption spectrophotometry. The results were statistically analysed by ANOVA, Scheffe's and Dunnett's T3 tests.

Results: In Fuji II group, the F uptake was 0.73 mg F/cm³ at day 1, 0.95 at day 7 and reached 2.26 at day 35 whereas that of Fuji II LC group was 0.65, 0.89 and 1.96 mg F/cm³ respectively. For Giomer, the level of F uptake was 0.79 (day 1), 1.05 (day 7) and reached 2.07 mg F/cm³ (day 35) and that for Dyract AP was 0.38, 0.49 and 1.02 mg F/cm³ respectively. Significantly higher levels of fluoride uptake were observed with both glass ionomers and giomer whereas the least amount of fluoride uptake was found with compomer in all test intervals (P < 0.05). No significant difference was found in the amounts of fluoride uptake between two glass ionomers and giomer (P > 0.05).

Conclusion: It is concluded that fluoride-releasing restorative materials have influence on enamel fluoride acquirement with variations during time intervals.

P02-25

Evaluating GIC bond strength: microshear and microtensile

C. C. BONIFÁCIO^{1,2}, A. M. SHIMAOKA², A. P. ANDRADE², W. E. VAN AMERONGEN¹ & R. C. R. CARVALHO²

¹Department of Cariology Endodontology Pedodontology, Academic Centre for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands; ²Department of Restorative Dentistry, School of Dentistry, University of São Paulo (USP), São Paulo, Brazil

Introduction: This *in vitro* study aims to compare the microtensile (μ TBS) and microshear (μ SBS) bond strength (BS) tests in order to find the most reliable method for BS evaluation at the tooth/Glass Ionomer Cement (GIC) interface.

Materials and methods: Flat human dentine surfaces were submitted to μ TBS and μ SBS. The materials used were: high-viscous GIC (KetacTM Molar Aplicap – 3M/ ESPE -KM), resin-modified GIC (Fuji II LC encapsulated – CG Corporation – FII), resin-modified nano-ionomer (KetacTM N100 – 3M/ ESPE – N100) and microhybrid resin composite (Z100 – 3M/ESPE). After 24 h of water storage all tests were performed with a universal testing machine (crosshead speed = 1 mm/min). The data was analyzed with two-way ANOVA (P < 0.05) and LSD test.

Results: Tests and materials were statistically different, indicating that values for BS obtained per material depend on the test performed. Failure analysis, determined with stereomicroscope (X40), revealed that failures produced by μ TBS were mainly cohesive for KM and FII. μ SBS failures were mainly adhesives or mixed for all materials. According to μ SBS, the BS found for KM and for FII was similar to Z100. Nevertheless, the μ TBS revealed that KM results were in line with N100, which were statistically inferior to Z100's and, to a lesser extent to FII. The μ TBS results are questionable due to the large percentage of cohesive failures found.

Conclusion: The mechanical test that gave the most reliable BS value of the studied GIC is the μ SBS method as it presented significantly more adhesive or mixed failures than μ TBS.

P02-26

Effects of tooth type, dentin adhesives and base materials on occlusal/gingival microleakage

E. CANOGLU, H. C. GUNGOR & Z. C. CEHRELI Department of Paediatric Dentistry, Hacettepe University, Ankara, Turkey

Introduction: Although a majority of adhesive/restorative materials are designed primarily for use in permanent teeth, little data exists with regard to their sealing properties on primary teeth. This study compared microleakage of Class-II composite restorations bonded with different adhesive systems and base materials in primary and permanent teeth.

Materials and methods: Class-II cavities were prepared in primary and permanent molars. The teeth were bonded either with Single Bond 2 or Adper SE Plus. A resin-based composite was placed either alone (no base) or over one of the following base materials (n = 10/each) 1: Fuji VII; 2: Fuji Triage; 3: Filtek Supreme XT. Following thermocycling and immersion in basic fuchsin, the microleakage was measured using image analysis. The data were analysed with Wilcoxon Signed Ranks Test, Mann–Whitney *U*-Test and Kruskal–Wallis One-Way ANOVA at $\alpha = 0.05$.

Results: The greatest and lowest occlusal microleakage were observed in 'No-base + Adper SE Plus' permanent teeth (0.80 \pm 0.06); and 'No-base + Single Bond 2' primary teeth (0.10 \pm 0.03), respectively (P < 0.001). As for gingival microleakage, the greatest and lowest values were observed in 'Fuji VII + Single Bond 2' primary teeth (1.47 \pm 0.23) and 'Fuji VII + Adper SE Plus' primary teeth (0.30 \pm 0.06), respectively (P < 0.001). Placement of a base material did not significantly improve resistance to leakage (P > 0.05).

Conclusion: With the tested adhesives, occlusal microleakage was similar in both types of teeth, while a lesser extent of gingival seal was observed in primary teeth. The use of a base material did not help decrease microleakage.

P02-27

Adhesive systems application substantiation for cavity treatment in teeth with differing enamel mineral content

Z. H. CHUIKO & L. KISELNIKOVA

Department of Paediatric Dentistry, Moscow State University of Medicine and Dentistry, Russia

Introduction: The aim of this study was to build a basis for the application of different adhesive techniques in patients of various age groups considering mineral content of the enamel according to clinical and laboratory research results.

Materials and methods: 160 teeth were filled in 70 patients (Group A: 12–17 years old and Group B 18–25 years old), both with Subgroups '1' (high and medium enamel resistance) and '2' (low enamel resistance). The following adhesive systems were used: 'Single Bond' (total etching technique); 'Adper Prompt L-Pop' (self-etching system). 'Filtek Z 250' served as filling material. Clinical evaluation of the fillings was carried out according to RÜGE after 12 months. At the same time, filling edge permeability was tested electrometrically with test equipment 'ED-01 DentEst' from the Russian company 'Geosoft-Dent'.

Results: After 12 months, 10% of all fillings showed a visible crack at the joint of the filling and tooth, accompanied by surface unevenness – rated 'Bravo'. Group 'B', Subgroup '1' using APL-P accounted for these defects. Other fillings were rated as 'Alfa'. An insignificant increase in the electrometric index of Group 'B' using APL-P from 0.41 \pm 0.04 to 0.68 \pm 0.03 MkA occurred. Only in

Poster Sessions

Group 'A' using APL-P electrometric index reduction from 0.88 ± 0.19 to 0.65 ± 0.14 MkA was observed.

Conclusion: The use of the self-etching system for wide clinical practice is recommended, especially for the treatment of cavities in children's teeth. The total etching technique is recommended for adults with high enamel resistance.

P02-28

Effect of chlorhexidine concentration on the mechanical properties of dental adhesive resins

<u>C. W. M. CHUNG</u>, C. K. Y. YIU, N. HIRAISHI & N. M. KING Faculty of Dentistry, Paediatric Dentistry and Orthodontics, The University of Hong Kong, Prince Philip Dental Hospital, Hong Kong SAR, China

Introduction: Matrix metalloproteinases (MMP) have been implicated in collagen degradation within the hybrid layer. Incorporation of chlorhexidine, a potent MMP inhibitor, into dental adhesive resin may help to prevent dentin bond degradation. The objective of this study was to investigate the effect of chlorhexidine concentration on the mechanical properties of experimental dental adhesive resins.

Materials and methods: Resin 'I' beams and discs were prepared from three light-cured, experimental copolymer blends (R1, R2 and R3) containing 0.0, 1.0 and 2.0 wt% chlorhexidine diacetate (CDA). The flexural strength (FS) and flexural modulus (FM) were measured using three-point flexural tests after 24 h dry and wet storage. FS and FM were analyzed using two-way ANOVA, with resin material, CDA concentration and storage time as independent factors. Knoop hardness was analysed using two-way ANOVA, with resin material and CDA concentration as independent factors. Results: Incorporation of CDA had no significant effect on FS of dry and wet R1, R2 and R3 specimens. FM of dry R1, R2 and R3 specimens decreased significantly (P < 0.05) with increasing concentration of CDA. No significant effect of CDA on FM of wet R1, R2 and R3 specimens was observed. In general, FS and FM of neat and CDA-incorporated R1, R2 and R3 specimens decreased significantly (P < 0.05) following water storage. Addition of CDA significantly (P < 0.05) reduced the Knoop hardness of dry R1, R2 and R3 specimens.

Conclusion: Chlorhexidine decreased the flexural modulus and Knoop hardness of copolymer blends; no significant effect on mechanical properties was observed under wet conditions.

P02-29

Bond strengths of self-etch adhesives in laser pepared cavities

Y. GUVEN, H. COMLEKCI & O. AKTOREN Faculty of Dentistry, Istanbul University, Department of Pedodontics, Istanbul, Turkey

Introduction: The use of laser in cavity preparation as an alternative to mechanical rotating instruments has shown contradictary results on bond strengths of adhesives. The aim of this study was to assess and to compare the bond strengths of various self-etching adhesives in lased and unlased dentin surfaces.

Materials and methods: 80 extracted noncarious molar teeth were embedded in acrylic resin; flat labial dentin surfaces were prepared and wet-ground with 600 grit SiC paper. Specimens were randomly assigned to eight groups (*n*: 10): Group 1: Er: YAG laser (Fidelis Plus II, Fotona) + Silorane System Adhesive (3M Espe); Group 2: Er: YAG laser + Clearfil S3 Bond (Kuraray Co Ltd.); Group 3: Er: YAG laser + G-Bond (GC America Inc); Group 4: Er: YAG laser + iBond (Heraeus Kulzer); Group 5: Silorane System Adhesive; Group 6: Clearfil S3 Bond; Group7: G-Bond; Group 8: i-Bond. In Groups 1–4, Er: YAG laser was applied in VSP mode by 10 Hz and 300 mj; all self-etch adhesives were applied according to the manufacturers' instructions; 3.5×2.0 mm cylindrical molds filled with the respective composites were placed over the adhesives and light cured. Specimens stored in distilled water for 24 h were then subjected to shear bond strength (SBS) test in an Instron Universal Testing machine at a crosshead speed of 1 mm/min. SBS data in MPa was statistically analyzed by one-way ANOVA, Tukey-Kramer MultipleComparisons and unpaired-*t* tests.

Results: Mean + SD values (MPa): Group 1: 16.25 ± 3.54 ; Group 2: 14.89 ± 3.47 ; Group 3: 13.88 ± 4.5 ; Group 4: 9.91 ± 3.35 ; Group 5: 19.17 ± 7.01 ; Group 6: 18.74 ± 5.09 ; Group 7: 14.36 ± 4.67 ; Group 8: 11.07 ± 3.58 . Significant differences were determined between Groups 1-4 (P < 0.01), Groups 2-4 (P < 0.05), Groups 5-8 (P < 0.01), Groups 6-8 (P < 0.05). No significant differences were found between the other groups. **Conclusion:** Specimens treated with laser demonstrated lower but not significantly different mean bond strengths than the unlased

not significantly different mean bond strengths than the unlased controls; and Silorane System Adhesive has shown the highest mean SBS values in the lased and unlased groups.

P02-30

24-month clinical evaluation of a self-etching bonding agent in preventive resin restoration

Y. ZHAO, C. YU & L. H. GE Department of Pediatric Dentistry, School and Hospital of Stomatology, Peking University, Beijing, China

Introduction: Several clinical studies have shown that reliable and long lasting adhesive restorations can be obtained following the total-etch technique. However, scarce information is available on the clinical performance of self-etch adhesives. The objective of this study was to evaluate the clinical effect of a self-etching (Adper™ Prompt[™], PT) bonding agent in preventive resin restoration (PRR). Materials and methods: The study was approved by the Human Research Ethics Committee of Peking University (No. IRB00001052-06054). Parental consent for the child's participation was obtained. A total of 142 carious molars from 52 children, were divided randomly into two groups, using PT or Adper™ Single Bond 2 (total-etch technique) respectively. Then they were restored by flowable composite resin (Filtek™ Flow, 3M ESPE, USA). The modified United States Public Health Service (USPHS) evaluation criteria were used to evaluate the clinical effects at 6, 12, 18 and 24 months recall after treatment. Data were analyzed using SPSS 12.0 for Windows software. Chi-square tests were used to determine significant differences between two groups. Statistical significance was considered to be present at the 0.05 level.

Results: After 24 months, the recall rate (of the teeth) was 85.9% and the survival rate was 100%. There were no statistically significant differences between the two groups at retention, marginal sealing, marginal staining, secondary caries and pulp sensitivity. All of them were considered well during 24 months.

Conclusion: The result from this study indicated that PT could get satisfying clinical results when used in PRR. Long-term performance needs to be evaluated further.

P02-31

Effects of polymerisation unit on the flexural strength of glass carbomer

K. GORSETA, D. NEGOVETIC VRANIC, D. GLAVINA & I. SKRINJARIC

Department of Paediatric and Preventive Dentistry, School of Dental Medicine, University of Zagreb, Croatia

Introduction: The aim of this study was to measure the flexural strength (FS) of new nano-ionomer cement and to determine if strength can be related to polymerisation unit and applied light intensity.

Materials and methods: The FS of commercial glass ionomer (Fuji IX GP Fast, GC) and new nano-ionomer cement (Glass Carbomer) were measured using a method based on ISO9917-2:1998. Specimens (n = 10 per group) were prepared in SS split moulds ($2 \times 2 \times 25$ mm), compressed and light-cured according to manufacturers' instructions, stored at 37 °C (100% RH) for 24 h. Light curing was carried out immediately after mixing using Bluephase G2 (IvoclarVivadent), Elipar[™] FreeLight 2 and Elipar[™] TriLight (3M ESPE). Each specimen was tested using an Universal testing machine at 1 mm/min crosshead speed and loaded to fracture using a 3-point bending test (1 = 20 mm), with 1 kN load cell. Data were analysed by ANOVA and Bonferroni *post hoc* test P < 0.05.

Results: FS of Glass Carbomer (122.29 \pm 9.9 MPa) was significantly higher than value for highly viscous glass ionomer Fuji IX (57.85 \pm 7.54 MPa) (P < 0.001). There were no statistically significant differences in FS of GlassCarbomer samples cured by means of different light sources. FS of Fuji IX GP fast cured with EliparFreeLight (98.87 \pm 20 MPa) showed significantly higher results than samples cured with halogen lamp (31.27 \pm 7.49 MPa) (P < 0.001).

Conclusion: The nano-ionomer cement Glass Carbomer shows higher flexural strength than highly viscous glass ionomer cement cured by different types of curing light. Different types of curing light (halogen lamp and LED lamp) significantly influence flexural strength of glass ionomer cement.

P02-32

The therapeutic effect of fluoride-containing adhesive tape on dentin hypersensitivity

H. G. JANG, N. Y. LEE & S. H. LEE

Department of Pediatric Dentistry, Chosun University, Gwang ju, South Korea

Introduction: In this clinical research, the fluoride tape (SCMC-5-T) containg NaF which is known as one of the most effective ways to treat the teeth hypersensitivity was developed and manufactured and the treatment effect of the fluoride tape in dentin hypersensitivity patients was evaluated and compared with the effect of existing fluoride varnish (CavityShieldTM).

Patients and methods: Twenty two healthy adult patients (88 teeth) aged in the 20s having dentin hypersensitivity participated in this clinical research and they were divided into two groups of 11 patients in which one group was an experimental group treated with attachment of the fluoride tape and the other group was treated with application of the fluoride varnish. The fluoride product was applied according to the manufacturer's instruction and the level of pain in the tooth after giving irritation using compressed air and ice stick was measured just after the application, after 3 days, after a week and after 4 weeks each using visual analog scale (VAS).

Results: In the experimental group, VAS scores were 38.636 (air), 62.273 (ice) at an early stage, 30.273 (air), 49.545 (ice) after 3 days, 28.182 (air), 40.000 (ice) after one week, and 26.364 (air), 37.727 (ice) after 4 weeks. Compared with the early VAS scores, all other VAS scores showed the significant decreases statistically. In the control group, VAS scores were 42.274 (air), 65.909 (ice) at an early stage, 34.091(air), 55.909 (ice) after 3 days, 28.636 (air), 40.909 (ice) after one week, 27.727 (air), 31.364 (ice) after 4 weeks. All VAS scores except the VAS score of 34.091 (air) measured 3 days after (using the irritation examination by the compressed air) showed the significant decreases statistically when compared with the early VAS scores.

Conclusion: The fluoride tape used in this clinical research was able to treat the dentin hypersensitivity effectively. Also, when compared to the treatment effect of the fluoride varnish no significant difference was shown. Copyright of International Journal of Paediatric Dentistry is the property of Blackwell Publishing Limited and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use. Copyright of International Journal of Paediatric Dentistry is the property of Blackwell Publishing Limited and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.