

tests were performed (Instron 3345). Data was analyzed by two-way ANOVA and Student-Newman-Keuls tests ($p < 0.05$). Failure mode was evaluated using a stereomicroscope at original $\times 40$ magnification, and the most representative failures for each group were analyzed by scanning electron microscopy.

Results

The two-way ANOVA showed that the variable dentin pretreatment influenced on the dependent variable bond strength ($p < 0.001$), whereas the root third variable and the interaction between them did not ($p > 0.05$). It was observed that bond strength values after phosphoric acid and polyacrylic acid treatments were statistically similar, but statistically higher than the results achieved by no dentin pretreatment group. The lowest values were obtained by EDTA group.

Conclusions

The bond strength of the self-adhesive resin cement Re-lyX Unicem2 Automix is improved when root dentin is pretreated with a mild (polyacrylic acid 25%) or strong acid (phosphoric acid 35%) before luting fiber posts. The root depth did not influence the push-out bond strength of the cement.

- Oral Presentation 10

TITLE: Five-year clinical evaluation of posterior restorations: silorane- versus methacrylate-based composite

AUTHORS: Baracco B, Fuentes MV, Perdigão J, Ceballos L.

SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S5.

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Objectives

To compare the five-year clinical performance in posterior restorations of three restorative systems including a low-shrinkage system and a methacrylate based composite combined either with an etch-and-rinse or a self-etch adhesive.

Materials and Methods

After signing an informed consent, 25 patients received three Class I (occlusal) or Class II restorations performed with one of three restorative systems: Filtek Silorane Restorative System; Adper Scotchbond 1 XT (two-step etch-and-rinse adhesive) + Filtek Z250; and Adper Scotchbond SE (two-step self-etch adhesive) + Filtek Z250. All materials belong to 3M ESPE and were applied following its

instructions. Two blind observers evaluated the restorations at four different moments (baseline, after one, two and five years) according to the USPHS modified criteria. Kruskal-Wallis and Mann Whitney U tests were used to compare the behavior of the restorative systems, while Friedman and Wilcoxon tests were applied to analyze the intra-system data ($p < 0.05$).

Results

After five years of clinical use, the restorations of Adper Scotchbond SE + Filtek Z250 showed statistically higher marginal staining than the other two restorative systems. Intra-system comparisons between baseline and five-year showed worse marginal adaptation scores for all the systems, while marginal staining increased in both systems composed by self-etch adhesives. Restorations performed with Adper Scotchbond SE + Filtek Z250 also recorded worse values in color match and surface roughness after five years.

Conclusions

The clinical performance of Filtek Silorane after five years was found acceptable. However, this long-term clinical study did not find any advantage of the silorane-over the methacrylate-based composite when combined with an etch-and-rinse adhesive.

- Oral Presentation 11

TITLE: Effects of irrigation solution on radicular dentin

AUTHORS: Barón M, Morales V, Linares M, Escribano N, Ceballos L.

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Objectives

The root canal treatment is potentially aggressive for the radicular dentin. The endodontic solutions used to eliminate bacterial infection can also induce chemical and physical changes in dentin's inorganic and organic components. The aim of this study is to evaluate these changes in dentin composition.

Materials and Methods

Four single root teeth were sectioned at cemento enamel junction. The specimens were instrumented with 10 diameter k-file (Dentsply Maillefer, Switzerland) followed by Protaper Universal system: SX, S1, S2 F1 And F2 (Dentsply, Maillefer, Switzerland). All roots were sectioned into 600-500 μm thick slices. Six specimens

were obtained from each root : two coronal third slices, two medium third slices and two apical third slices. The sample was randomly distributed randomly in 3 different study groups: NaOCl 5.25% for 1 minute (3ml), NaOCl 5.25% for 5 minutes (3ml), NaOCl 5.25% for 20 minutes (3ml) plus EDTA 17% for 1 minute (3ml). Each specimen acted as its own control specimen and was immersed in the tested solutions for the estimated time. All specimens were cleaned for 10 seconds in an ultrasonic device before and after treatment with the solutions. The roots were inspected under Fourier Transform Infrared spectroscopy (Excalibur 3010 FT-IR, Varian, Walnut Creek, USA) to evaluate the inorganic and organic composition. The statistically tests were Friedman's and Wilcoxon's Test to assess changes in the same radicular third. The Kruskal-Wallis' and Mann-Whitney's were used to evaluate changes among root dentin thirds.

Results

No changes were registered in the phosphate group in the 3 study groups. In the NaOCl 5.25% group, Amida III and Amida I significantly decreased in the apical third. The Amida I also decreased in the medium third too. In the EDTA 17% group, Amida III and Amida I were increased in the apical third.

Conclusions

The inorganic component of the root dentine is not affected by the irrigation solutions. NaOCl 5.25% and EDTA 17% caused changes in the organic component of the root dentin, specially in the apical third.

- Oral Presentation 12

TITLE: Indirect fiber-reinforced composite dowel-core

AUTHORS: Bernardo-Clari J, Torres-Nebril A, Alegre-Domingo T, Faus-Matoses V, Faus-Llácer VJ.
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Introduction

To minimize polymerization shrinkage in the case of non-cylindrical root canals, it is proposed to perform indirect fiber-reinforced composite dowel-cores.

Case report

Three cases of endodontically treated maxillary incisors (two lateral incisors and one central incisor) requiring a post for restoration are presented. Once root canal

treatments were completed, the post spaces were prepared with Gates Glidden burs. Then, impressions with silicone (Elite HD +, Zhermack, Badia Polesine, Italy) were taken with acrylic resin dowels for preparing the dowel-cores in the laboratory. After checking the fitting, the indirect dowel-cores were luted with a high filler load dual resin cement (Core X Flow, Dentsply Maillefer, Konstanz, Germany), following manufacturer's instructions.

Conclusions

This type of indirect dowel-core allows a better adaptation to the canal walls. It is required a smaller amount of cement around and less curing shrinkage is obtained. Therefore, the adhesion of the post within the root canal is improved.

- Oral Presentation 13

TITLE: Using Artificial Intelligence to predict endodontic failure

AUTHORS: Campo Nieves L, De Paz Santana JF, García Barbero AE, Hernando Dumaraog B, Aliaga Vera I, Vera González V.

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Objectives

This manuscript describes the application of Artificial Intelligence (AI) techniques, specifically Case-Based Reasoning (CBR), to predict the failure of root canal therapy.

Materials and Methods

The study was performed on 35 patients who experienced failure in root canal therapy, specifically by crown-root fracture, the appearance of a periapical lesion or the expansion of an existing one. We determined the variables that could influence the appearance of periapical lesion and the level of significance, primarily by applying statistical tests (Chi square, Fischer exact test, and Monte Carlo simulation), before creating the CBR to make predictions.

Results

The creation of a CBR system that integrates Bayesian networks in the reuse phase presented a treatment failure predictive capacity of 89%.

Conclusions

CBR systems were effective in predicting endodontic failures caused by crown-root fracture, the appearance