

## - Oral Presentation 1

**TITLE: Endodontic retreatment. Reconstruction with canal projector technique: A case report**

**AUTHORS: Abad Abad A, García Sanz I, Reviejo Fragua M.**

**SOURCE: J Clin Exp Dent. 2014 August 1;6 (Supplement1):S1.**

\* doi:10.4317/jced.17643785

<http://dx.doi.org/10.4317/jced.17643785>

### Introduction

Root Canal Projectors are plastic cones that are carried to the canal by endodontic hand files. They serve as “internal matrix barriers” around which the pre - endodontic restorative material is injected. After the polymerization of the restorative material, the Projectors Canal are removed, leaving the reconstructed crown and the projection of the channels through the restorative material.

### Case report

It is presented the case of a female patient who comes to receive her treatment to the Master of Endodontics and Restorative Dentistry, Rey Juan Carlos University. In the 26 tooth has a metal - ceramic mismatched crown, a cast post and core and absence of endodontic treatment. In the X-ray image is seen a radiolucency at the level of the palatal and mesiobuccal root. The percussion is negative and the probing is physiological. It is diagnosed as chronic apical periodontitis. The proposed treatment plan was the removal of the crown and pin, treatment of root canals, reconstruction with fiberglass post and metal - ceramic crown.

The post and core is removed with peripheral wasting with tungsten carbide bur and ultrasonic vibrating tip. After the gingivectomy of the distal papilla, framing and pre - endodontic reconstruction with Projector Canal technique (Capillary Tips (Ultradent) and Multicore® Flow ( IvoclarVivadent)) is performed. The root canals are instrumented with Protaper Next and sealed with gutta-percha (apical cap and back- filling). Reconstruction with fiberglass post and core built with composite (Filtek Supreme XTE) is performed. A resin temporary crown with Vysacril Protemp is made (3M ESPE) and we will be monitoring the prior case to final cementation of metal-ceramic crown.

### Conclusions

The reconstruction pre-endodontic technique with Canal Projector can be an interesting alternative to endodontic cases with severe coronal tooth loss. Provides advantages as better access to canal, reduced incidence of crown root fracture between appointments, hermetically sealed filtration areas and easier isolation.

## - Oral Presentation 2

**TITLE: Susceptibility of the composite to the coffee stain. In vitro study**

**AUTHORS: Acevedo Duque E, Cano Tébar AB, Molina Barbé AB, Chiva García F.**

**SOURCE: J Clin Exp Dent. 2014 August 1;6 (Supplement1):S1.**

\* doi:10.4317/jced.17643786

<http://dx.doi.org/10.4317/jced.17643786>

### Objectives

To evaluate in vitro if the coffee causes a color variation on composite resins (CieL-ch space) and if the polishing promotes such changes.

### Materials and Methods

36 disks (8 mm diameter; 2mm thickness) of Spectrum (DENTSPLY®) A2 composite resin were prepared and assigned randomly to 6 groups:

- Group 1: 6 polymerized disks with an acetate matrix interposed
- Group 2: 6 disks polished with Sof-lex system
- Group 3: 6 disks polished with Opti1 Step system
- Group 4: 6 disks polished with OptiDisc system
- Group 5: 6 disks polished with Occlubrush system
- Group 6: 6 disks unpolished

Disks were immersed in coffee intermittently for a total of 45 seconds in two sequences of five days, measuring the color after each dive with Easyshade (Vita) spectrophotometer. Then disks were stored in physiological serum during one month measuring the color again. Data were statistically analyzed with the SPSS v15 program using a repeated measures ANOVA in association with the Tukey's post-hoc test.

### Results

A statistically significant ( $p < 0.05$ ) reduction of lightness (L) was observed of the average between group 1 (5.10) and group 6(7.47) with respect to group 2(4.67) and group 4(4.07). Chroma(c) increased and significant differences were obtained between group 1(-0.80) and group 6(-4.74) vs. group 3(0.60) and group 4(2.12). About hue (h), no significant differences between groups were found.

### Conclusions

Common coffee consumption produced changes in the optical properties of the composites resins, mainly on the luminosity. Polishing is important to prevent chroma increase and the decrease of the lightness.

### - Oral Presentation 3

#### **TITLE: Using Case Based Reasoning System to predict composite restorations failure**

**AUTHORS: Aliaga I, García-Barbero AE, Vera V, Campo L, Hernando B, Montalvo N, De Paz JF.**

**SOURCE: J Clin Exp Dent. 2014 August 1;6 (Supplement1):S2.**

\* doi:10.4317/jced.17643787

<http://dx.doi.org/10.4317/jced.17643787>

#### **Objectives**

The objective of this study was to validate if the Case Based Reasoning System is an appropriate tool for predicting composite restoration failures in the posterior teeth and establish the variables more statistically significant on the failure.

#### **Materials and Methods**

The study included patients from the Complutense University of Madrid, School of Dentistry, who needed dental treatment. Forty patients were recruited; Fourth year dental students treated patients during clinical practices in the Conservative Department. Once the teacher reviewed the treatment plan, the student did the treatment and clinical questionnaire was filled up. Clinical, radiographic data and two questionnaires were collected. The restoration was revised after twelve months. The University of Salamanca, Department of Informatics in the School of Science, coded the data to facilitate the statistical analysis and generate a prediction system.

#### **Results**

The study shows the statistically most influential variables, perforation of the rubber dam, incomplete caries removal, tooth-brushing habits, and age of the patient. Applying the algorithm SMO to all cases were studied and the system shows an 87.5 % of predictive power.

#### **Conclusions**

Case Based Reasoning System is a useful tool in predicting the failure of composite restorations and will determine which variables are statistically more influential on the failure.

### - Oral Presentation 4

#### **TITLE: Diastema closure with composite**

**AUTHORS: Álvarez-Maldonado de Castro N, Albertí Vich C, Araujo E, Luengo Capilla MA, Cura Peña M.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S2.**

\* doi:10.4317/jced.17643788

<http://dx.doi.org/10.4317/jced.17643788>

#### **Introduction**

Restoring dentofacial harmony in young patients after orthodontic treatment is common for clinicians in their daily practice. One of the toughest challenges is doing in young patients, where the most conservative techniques, are often more difficult and technical skill required. So far we have complex systems of composite resins that require some experience when stratifying masses with different opacity and optical characteristics. Recently there have been systems where, with a single mass, we achieve excellent results that satisfy both clinicians and patients.

#### **Case report**

A 16 year old male with none medical history of relevance, that comes to Expert in Cosmetic Dentistry, University Rey Juan Carlos, after orthodontic treatment demanding improved aesthetics, introducing diastemas of 13-23.

Previous waxed and mock up, we decided to make a first home bleaching with thermoplastic individualized splints and carbamide peroxide 10 %.

As restorations, we decided to use direct composite, selecting a resin system that would allow us to use a single mass of opacity due to the inability to stratify different masses by not having sufficient thickness. We decided to use Estelite Asteria (Tokuyama) in its opacity body, achieving great results thanks to its excellent properties.

#### **Conclusions**

Selecting either case, we can get satisfactory results with a single mass of composite, simplifying the technique to eliminate stratification and laborious selection of color to focus only on the final shape we want to give our restorations, thus bringing the general dentist to aesthetic dentistry.

### - Oral Presentation 5

#### **TITLE: Endocrown as an alternative to conventional restoration techniques of non-vital tooth**

**AUTHORS: Amorós Carazo C, Ortega Molina A, González Villafranca P, Valenzuela Triviño V, García Bravo M, Rosel Gallardo E, Conde País J, González López S.**

**SOURCE: J Clin Exp Dent. 2014 August 1;6 (Supplement1):S2.**

\* doi:10.4317/jced.17643789

<http://dx.doi.org/10.4317/jced.17643789>

## Introduction

Nowadays, it is considered that the viability of a non-vital tooth is reduced by the loss of tooth tissue, so if it is less dental tissue, the tooth is more susceptible to fracture. There are interesting techniques that allow us to preserve the more possible dental tissue. Endocrown consists of a unique structure that uses the camera as retention and covers the overall occlusal surface without using intracanal pin.

## Case report

42 year old patient who came to the Multidisciplinary Master Aesthetic Dentistry at the University of Granada to present symptoms at upper right second molar. Endodontics was performed with the same system files Protaper and sealed with Thermafil. As an alternative to conventional restoration techniques, post and crowns, we chose conducting a Endocrown indirect composite.

## Conclusions

Currently, Endocrown is a good alternative instead of using full coverage crowns, because it respects more dental tissue by using pulp camera as retention. Using pins is not required, and also, with the current adhesion system, we have a good prognosis against occlusal loadings and a good biomechanical behaviour.

## - Oral Presentation 6

**TITLE: Anterior front rehabilitation with lithium disilicate crowns**

**AUTHORS: Armenteros Pe érez A, Palomares Muriana T, Gonza ález Villafranca P, Rodri íguez Pe érez M, Otero A Ávila A, Costas Soto A, Gonza ález Lo ópez S.**

**SOURCE: J Clin Exp Dent. 2014 August 1;6 (Supplement1):S3.**

\* doi:10.4317/jced.17643790

<http://dx.doi.org/10.4317/jced.17643790>

## Introduction

Esthetic and functional rehabilitation with lithium disilicate crowns in anterior front.

## Case report

46-year-old female patient comes to Esthetic Master demanding for a restorative treatment of anterior front. After a periodontal and radiological evaluation, we designed a treatment plan which included an esthetic rehabilitation using lithium disilicate full coverage crowns. Treatment consisted in extraction of 12, root canal treatment in 21, reinforcing it with glass fiber post, and placement of lithium disilicate crowns in 21, 22 and 23

and a same material bridge from 13 to 11, after phase with long term provisional crowns and ovate pontic in 12 to remodel soft tissues.

## Conclusions

Lithium disilicate crowns play an integral role in providing high-quality and natural-appearing restorations as long as we can obtain enough ferrule effect that guaranties their longevity.

## - Oral Presentation 7

**TITLE: Microtensile bond strength of aged Lava Ultimate composite repaired following different protocols**

**AUTHORS: Arpa C, Ceballos L, Fuentes MV, Perdigão J.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S3.**

\* doi:10.4317/jced.17643791

<http://dx.doi.org/10.4317/jced.17643791>

## Objectives

To evaluate the effect of surface conditioning on repair microtensile bond strength ( $\mu$ TBS) of artificially aged Lava Ultimate (LU) indirect restorative material.

## Materials and Methods

Twenty-one LU blocks (6.0x6.0x5.5) were prepared, thermocycled (10,000 cycles, 5-55°C) and then randomly assigned to one of seven surface conditioning protocols: A. Silica coating (Cojet, 3M ESPE) and Scotchbond Universal Adhesive (SBU, 3M ESPE); B. Silica coating, silane (SI, ESPESil, 3M ESPE) and Adper Scotchbond 1XT Adhesive (XT, 3M ESPE); C. Sandblasting with alumina particles, phosphoric acid (PA) and SBU; D. Alumina sandblasting, PA, SI and XT; E. Abrasion with 280 grit SiC paper, PA and SBU; F. 4.9 % Hydrofluoric acid (IPS Ceramic Etching Gel, Ivoclar Vivadent) etching for 20s and silane application (Monobond Plus, Ivoclar Vivadent); G. PA and XT. All specimens were repaired with Filtek Supreme XTE (A4B, 3M ESPE) resin composite. Repaired blocks were sectioned in order to obtain stick-shaped specimens (0.8mm<sup>2</sup>) and submitted to  $\mu$ TBS test. Data were analyzed with Kruskal-Wallis, Mann-Whitney U and Bonferroni tests ( $p < 0.05$ ). The lowest  $\mu$ TBS value obtained for each group was assigned to pre-test failures.

## Results

Mean  $\mu$ TBS in MPa and standard deviations are shown in Table. Surface conditioning with hydrofluoric acid and silane application resulted in 100% pre-test failures.

Surface conditioning	µTBS values (MPa)		
	x (sd)		n
Silica coating+SBU	57.9 (15.2)	a	19
Silica coating + SI + XT	52.3 (16.1)	a	18
Alumina sandblasting + PA + SBU	43.0 (29.9)	a	15
Alumina sandblasting + PA + SI + XT	58.9 (13.4)	a	13
280 grit SiC paper + PA + SBU	41.6 (13.5)	a	14
Hydrofluoric acid + Silane	0		51
PA + XT	7.9 (1.2)	b	30

Similar mean µTBS were obtained for the other surface treatments except for the groups in which specimens were repaired with PA application followed by XT Adhesive, which exhibited statistically lower results.

**Conclusions.** The application of hydrofluoric acid is not recommended to repair Lava Ultimate resin composite.

## - Oral Presentation 8

**TITLE: Fiberglass reinforcement in rebuilding fractured teeth**

**AUTHORS: Arroyo Bote S, Martínez Osorio J.**  
**SOURCE: J Clin Exp Dent. 2014 1;6**  
**(Supplement1):S4.**

\* doi:10.4317/jced.17643792

http://dx.doi.org/10.4317/jced.17643792

### Introduction

The anterior fracture is a common situation that represents a major clinical challenge. The goal of treatment should be to restore the anatomy and function of the fractured teeth, however the percentage of teeth that undergo re-fracture is high, so the use of all materials and techniques that can help restore fracture resistance of the tooth must be considered when we decide to start the treatment.

### Case report

We present several cases of incisal angle fracture of upper anterior teeth, treated with esthetic materials: Adhesives, Composites and fiberglass-reinforced composite. In one case the treatment has been performed by re-attaching the broken tooth fragment to the remaining tooth structure with a fiberglass piece and in the remaining cases was performed fracture reconstruction by applying adhesive, composite and fiberglass. The aesthetic and functional result of the restorations has been satisfactory, doing control seasons of the restorations along to five years.

### Conclusions

The aesthetic result of fractured anterior teeth restorations made with adhesive techniques and fiberglass composites is optimal, we can obtaining restorations with greater resistance to fracture than those performed without glass fiber reinforcement, so we should consider this materials in the restoration of teeth fractured as the best option.

## - Oral Presentation 9

**TITLE: Influence of different root dentin pre-treatments on the bond strength of fiber posts**

**AUTHORS: Baena E, Flores A, Ceballos L.**  
**SOURCE: J Clin Exp Dent. 2014 1;6**  
**(Supplement1):S4.**

\* doi:10.4317/jced.17643793

http://dx.doi.org/10.4317/jced.17643793

### Objectives

The aim of this study was to assess whether different dentin conditioning protocols with strong or mild acids (phosphoric acid, ethylenediaminetetraacetic acid (EDTA) and polyacrylic acid) influence the bond strength of the self-adhesive resin cement RelyX® Unicem2 Automix (3M ESPE) when used to lute fiber posts along the radicular depth.

### Material and Methods

Twenty single-rooted teeth were randomly divided into four experimental groups (n=5) according to the pre-treatment procedure performed before luting RelyX Fiber Post (3M ESPE). Group 1: no dentin pretreatment; Group 2: pretreatment with 35% phosphoric acid for 10s; Group 3: pretreatment with EDTA gel 17% for 60s and Group 4: pretreatment with 25% polyacrylic acid for 30s. Roots were transversally sectioned into nine 1 mm thick specimens, three corresponding to each root third: coronal, middle and apical third and push-out

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 x40 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.**

\* doi:10.4317/jced.17643794

<http://dx.doi.org/10.4317/jced.17643794>

### 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.**

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

\* doi:10.4317/jced.17643795

<http://dx.doi.org/10.4317/jced.17643795>

### 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  $\mu\text{m}$  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.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S6.**

\* doi:10.4317/jced.17643796

<http://dx.doi.org/10.4317/jced.17643796>

### 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.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S6.**

\* doi:10.4317/jced.17643797

<http://dx.doi.org/10.4317/jced.17643797>

### 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

of a periapical lesion or the expansion of an existing one. These CBR systems provide valuable information that can be used to devise a tailored therapeutic approach.

## **- Oral Presentation 14**

**TITLE: Lithium disilicate crown rehabilitation on 1.1**

**AUTHORS: Costas Soto A, Rosel Gallardo E, Jiménez Martínez JD, Ortega Molina A, Rodríguez Pérez M, Otero Ávila A, Del Castillo Salmerón R.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S7.**

\* doi:10.4317/jced.17643798

<http://dx.doi.org/10.4317/jced.17643798>

### **Introduction**

Through this case report we show the replacement of a metal-ceramic crown on 1.1, with an important aesthetic difficulty because of gingiva shade projected by the metal and the opacity of the material itself.

### **Case report**

We report the case of a woman who comes on January 2014, to Máster Propio de Odontología Estética, University of Granada, with a metal-ceramic crown on 1.1, with a previous root canal treatment, without clinical symptomatology or radiological signs of pathology. The main reason that the patient relates is to equalize the crown on 1.1 to 2.1 in terms of colour, form, length, and to improve the aesthetic removing the gingiva shade generated by the old metal - ceramic crown. In the initial study we carry out the Digital Smile Design (DSD) which is transferred to a diagnostic wax of the right central incisor, in which we take on a silicone matrix to make, later, the provisional crown. In the moment of the metal - ceramic crown remotion, we can see that the gingiva shade is due to the metallic neck of the removed crown, and that the core colour is acceptable to be rehabilitated with a lithium disilicate crown. Thanks to the provisional crown remodeling we can level gingival margins on 1.1 and 2.1 as well as zenith, form and size. After that, we took digital impressions for the definitive lithium disilicate crown.

### **Conclusions**

Lithium disilicate is the material of choice in some clinical cases of anterior rehabilitations so we can resolve the opacity or aesthetics problems generated by the gingiva shade that are created by another materials like metal-ceramic crowns.

## **- Oral Presentation 15**

**TITLE: Leptin activates STAT3 signaling pathway in human dental pulp**

**AUTHORS: Crespo-Gallardo I, Martín-González J, Sánchez-Domínguez B, Martín-Jiménez M, Segura-Egea JJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S7.**

\* doi:10.4317/jced.17643799

<http://dx.doi.org/10.4317/jced.17643799>

### **Objectives**

After leptin receptor (LEPR) identification in normal and inflamed human dental pulp, a role for leptin in this tissue has been accepted. This study aims to assess if leptin signal transduction in human dental pulp involves STAT-3 phosphorylation.

### **Materials and Methods**

Fifteen dental pulp samples were obtained from freshly caries- and restoration- free extracted human third molars. Pulp samples were processed and to study the possible activation of STAT-3 by leptin, human dental pulp was stimulated with human leptin and solubilized lysed samples were analyzed by Western blot using antibodies that specifically recognize the tyrosine phosphorylated form of STAT-3 (P-STAT-3).

### **Results**

Leptin stimulated JAK-STAT pathway by promoting STAT-3 tyrosine phosphorylation. This signalling pathway was confirmed in all human dental pulps. Western blot analysis revealed the presence in the pulp samples of a protein with apparent molecular weight of 93 kDa, which corresponds to the estimated molecular weight of P-STAT-3. The amount of P-STAT-3 in every sample was controlled with anti- $\beta$ -tubulin immunoblot. Tyrosine phosphorylation of STAT-3 was observed in response to human leptin treatment. Activation of STAT-3 was observed at 0.1, 1 and 10 nM leptin but the maximal activation of STAT-3 was observed at 0.1 nM leptin. The relative amount of P-STAT-3 in stimulated pulps was significantly higher than in unstimulated pulps ( $p < 0.05$ ).

### **Conclusions**

STAT-3 is involved in leptin signalling pathways in human dental pulp. To further understand the signal transduction of leptin in human dental pulp, is important to assess the major other signalling pathways known to be activated by leptin receptor in other systems.

## - Oral Presentation 16

### TITLE: Effect of different surface pretreatment and aging on composite onlays bond strength

**AUTHORS:** Cura M, González-González I, Fuentes MV, Ceballos L.

**SOURCE:** J Clin Exp Dent. 2014 1;6 (Supplement1):S8.

\* doi:10.4317/jced.17643800

http://dx.doi.org/10.4317/jced.17643800

#### Objectives

To evaluate the influence of different surface pretreatments on microtensile bond strength ( $\mu$ TBS) of composite onlays after aging.

#### Materials and Methods

Composite onlays (Filtek Z250, 3M ESPE)( $\emptyset$  8 X 4 mm high) were randomly assigned to 6 groups, according to surface treatment: 1. Al<sub>2</sub>O<sub>3</sub>+1XT: Sandblasting with 27  $\mu$ m Al<sub>2</sub>O<sub>3</sub> particles + Adper Scotchbond 1XT (3M ESPE); 2. Al<sub>2</sub>O<sub>3</sub>+Si+1XT: Sandblasting with 27  $\mu$ m Al<sub>2</sub>O<sub>3</sub> particles + Silane application (ESPE SIL, 3M ESPE)+ Adper Scotchbond 1XT; 3. Al<sub>2</sub>O<sub>3</sub>+Universal: Sandblasting with 27  $\mu$ m Al<sub>2</sub>O<sub>3</sub> particles + Scotchbond Universal (3M ESPE); 4. Silica+1XT: Tribochemical silica coating 30  $\mu$ m particles (Cojet, 3M ESPE) + Adper Scotchbond 1XT; 5. Silica+Si+1XT: Tribochemical silica coating 30  $\mu$ m particles + Silane application +Adper Scotchbond 1XT; 6. Silica+Universal: Tribochemical silica coating 30  $\mu$ m particles + Scotchbond Universal. Composite overlays were luted using RelyX Ultimate resin cement (3M ESPE) to fresh resin composite specimens. Bonded assemblies were stored in water (24h or 6 months) and subsequently prepared for  $\mu$ TBS testing. Data were analyzed by two-way ANOVA, SNK and student t-tests (p<0.05). Failure mode distribution was recorded and selected fractured beams were observed under SEM.

#### Results

$\mu$ TBS mean values in MPa and standard deviations (sd) are shown in the table. Different letters indicate statisti-

cally different  $\mu$ TBS values among groups. \*Means statistical differences between 24 hours and 6 months.

#### Conclusions

Sandblasting followed by Adper Scotchbond 1XT or Scotchbond Universal adhesives application provided higher adhesive strength values at 24 hours. The latter was the experimental group that presented higher bond strength also 6 months later. The application of sandblasting or tribochemical silica coating before Scotchbond Universal adhesive produced stable bond strength values after 6 months storage.

## - Oral Presentation 17

### TITLE: Influence of ultrasonics used in endodontics on cardiac pacemakers and implantables automatic defibrillators

**AUTHORS:** De los Mozos García I, Bach Álvarez A, Campo Nieves L, Sánchez Garrido E, García Barbero E.

**SOURCE:** J Clin Exp Dent. 2014 1;6 (Supplement1):S8.

\* doi:10.4317/jced.17643801

http://dx.doi.org/10.4317/jced.17643801

#### Objectives

The aim of this study is to determine whether ultrasound devices, commonly used in Endodontics, affect the functioning of cardiac pacemakers and implantable automatic defibrillators.

#### Materials and Methods

We selected two models of cardiac pacemakers and three models of automatic defibrillators. All of them were used with ultrasonic tips Star-X connected to two types of ultrasounds: Kavo and Newtron P.S of Satelec. The pacemakers and defibrillators were analyzed with a clinical measurement system (Medtronic ® 2090 Programmer B.V. Netherlands).

A closed circuit was created by immersing one unir-

Surface pretreatment	24 hours			6 months		
	$\mu$ TBS (Sd) Mpa		n	$\mu$ TBS(Sd) Mpa		n
Al <sub>2</sub> O <sub>3</sub> +1XT	98(18)*	A	36	52,8(12,9)*	D	40
Al <sub>2</sub> O <sub>3</sub> +Si+1XT	76,9(19,9)*	BC	52	54(16,2)*	D	43
Al <sub>2</sub> O <sub>3</sub> +Universal	97,5(18,9)	A	45	91(19,15)	A	40
Silica+1XT	74,3(13,5)*	C	46	55,7(20,5)*	D	48
Silica+Si+1XT	83,3(15,6)*	B	44	68,3(24,8)*	C	47
Silica+Universal	71,2(18,3)	C	64	76,6(15,8)	B	46

radicular tooth in a 5cmx5cmx30cm container. The circuit was closed by connecting the cardiac pacemaker cable with the opposite end of the container. We monitored the pacemaker baseline in different situations. First, when the ultrasound was switched on, then using 1,2, and 3 power switches, in the case of Kavo ultrasound, and then with all power switches, from 1 to 20, in the Newtron ultrasound case. Each of the activations, in turn, was performed at 30 cm and 2 cm from the pacemaker's sensor.

The positive control was made by touching the alginate with the electrode of the electric scalpel. The negative control was made by touching the adjacent alginate with the tip of the Sonic Activator Endoactivator. The pacemaker's operation was monitored using the Medtronic system.

### Results

Ultrasounds altered the functioning of pacemakers and defibrillators in the same way that the electrical scalpel that was used as a positive control. They produced graphics altered by noise and changes in the mode of contraction.

### Conclusions

Ultrasonic devices adversely affect the operation of pacemakers and cardiodefibrillators. We believe that its use in patients with pacemakers or cardiodefibrillators should be contraindicated and we think more studies are needed which corroborate these results.

## - Oral Presentation 18

**TITLE: Endodontic and restorative treatment of two discolored incisors with silver points**

**AUTHORS: de Pablo OV, Diaz-Sanchez C.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S9.**

\* doi:10.4317/jced.17643802

<http://dx.doi.org/10.4317/jced.17643802>

### Introduction

The color change in an anterior tooth is a major cosmetic problem and a challenge for the dentist who should solve it. It is important to identify the cause to establish an appropriate treatment.

### Case report

We report a patient who underwent root canals with silver points in several upper teeth. Years later, the patient came with chronic apical periodontitis in two incisors and an unsatisfactory aesthetic result of the staining produced by said filling. After assessing the various

treatment options, we chose to approach the case conservatively. At endodontic level, we remove both silver points and due to wide apical caliber the canals were sealed with MTA and gutta-percha. Once retreatments were finished, we performed a cervical proper sealing glass ionomer and proceeded to perform an internal bleaching. The product used was sodium perborate mixed with distilled water and renewed weekly. Once the teeth had regained its original color, were restored conservatively with direct composite veneers. In subsequent recalls, we see the resolution of the apical periodontitis and the good performance of the restorations.

### Conclusions

When performing endodontic treatment of a tooth we have to discard materials that can alter the color of it, avoiding future problems. Internal bleaching with sodium perborate, in this case, has reversed staining produced by silver tips; endodontic retreatment with MTA and gutta percha has succeeded in healing a chronic apical periodontitis; and with the natural color of the teeth, veneers direct composite involves an aesthetic alternative satisfactory for the patient.

## - Oral Presentation 19

**TITLE: Indirect composite restoration performed through digital workflow**

**AUTHORS: De Vega Calleja S, Da Silva D, Fuentes MV, Luengo M, Ceballos L.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S9.**

\* doi:10.4317/jced.17643803

<http://dx.doi.org/10.4317/jced.17643803>

### Introduction

The application of digital technology to Dentistry brought important changes to the daily practice of clinicians, not only by simplifying procedures, but also by gradually improving the quality of treatments. Besides the simplification process of the clinical steps brought by the digital flux, the development of new CAD-CAM materials endows restorations with improved mechanical behaviour and better accuracy when compared with conventional techniques, improving the marginal adjustment, the anatomy and the contact points

### Case report

A patient (65 year old man) requires to be treated in the URJC University Clinic. Following clinical and radiographic studies, the need for endodontic and restorative treatment with an onlay in the 1.6 was detected. After performing the endodontic treatment, tooth preparation

was carried out and intraoral digital record was performed using the True Definition (3M) scanner for the task. For the incrustation Lava Ultimate (3M ESPE) was the material of choice, a composite purposely made to be processed by CAD-CAM techniques. The onlay was cemented, following manufacturer's instructions, using Scotchbond Universal adhesive and Rely X Ultimate (3M ESPE) resin cement.

### Conclusions

Following the restoration applying Lava Ultimate by the use of digital workflow, an excellent marginal adjustment was observed and, despite the fact the incrustation is obtained from a monochromatic block, a good aesthetical integration.

## - Oral Presentation 20

**TITLE: Non-surgical retreatment, sealed with mta, in incisor with apical radiolucent image**

**AUTHORS: Domínguez Pérez A, Riádigos Presas J, Rivas Mundiña B, Martín Biedma B, Varela Patiño P.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S10.**

\* doi:10.4317/jced.17643804  
<http://dx.doi.org/10.4317/jced.17643804>

### Introduction

Usually nonsurgical retreatment in teeth with periapical lesions is the most suitable alternative for being the less invasive treatment. this assuming the tooth is restorable and periodontally healthy.

### Case report

13 years old girl presents pain in endodontic tooth 2.1 derived from orthodontics unit . Clinical tests relate : positive palpation and percussion, mobility i, physiological probing and negative vitality. cbct is done to investigate horizontal fracture, which was discarded. we make the opening of the pulp chamber and remove the unimetric post with ultrasonic tips start x #3. gutta-percha is removed with rotary files and retreatment is performed with d protaper rotary files. mta is placed in the apical third followed by three millimeters of thermo-plastic gutta and a fiberglass post . we take impressions for diagnostic wax. the silicone was performed and the tooth was reconstructed using the layered banini's technique . review is done after 1 month and the tooth remains obscure so we decide to make a composite veneer . reviews at 3 and 10 months after treatment were performed.

### Conclusions

Nonsurgical retreatment was chosen because there is evidence of greater long-term success compared with endodontic surgery.

1. nonsurgical retreatment is chosen in endodontic teeth radiolucency .
2. nonsurgical retreatment has a similar rate to initial endodontic treatments cure .

## - Oral Presentation 21

**TITLE: Reliability of kubelka-munk spectral transmittance for resin composite translucency characterization**

**AUTHORS: Espinar C, Pulgar R, Roldán C, Ionescu AM, Lucena C.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S10.**

\* doi:10.4317/jced.17643805  
<http://dx.doi.org/10.4317/jced.17643805>

### Objectives

To determine the reliability of Kubelka-Munk theory for characterization of resin composites translucency. For this purpose, the estimated spectral transmittance and absolute transmittance of resin composites with different chroma and opacity degree were compared.

### Materials and Methods

Cylindrical samples (1cm in diameter and 1mm in thickness) of Filtek Supreme XTE (3M ESPE, Spain) resin composite were prepared. The composite resin was placed in a micrometer mold (Smile Line, Switzerland) in bulk, pressed with a glass slide and then light-cured through the glass at 1100 mW/cm<sup>2</sup> for 15 seconds (Blue-phase Style, Ivoclar, Vivodent). The surface appearance was checked under magnification, and the sample thickness was verified at three points with a digital caliper. Three samples of resin composite for each opacity (enamel, dentin, body) and chroma (A1, A2, A3) were prepared (n=27). The estimated spectral transmittance was calculated according to the Kubelka-Munk theory, by means of a spectroradiometer (PR-704 Spectra-Scan, Photo Research Inc., Chatsworth, CA, USA). The absolute transmittance was obtained from measurements made using an integrating sphere with Argon laser (457, 488 and 514nm) and He-Ne laser (632nm). Finally, Kubelka-Munk spectral transmittance curve and absolute spectral transmittance curve obtained for the different materials were compared.

## Results

The Kubelka-Munk transmittance overestimated translucency of all the resin composites tested. Furthermore, the estimated transmittance not adequately characterized differences between composites of different chroma (A1, A2, A3) or opacity degree (enamel, body and dentine).

## Conclusions

Reliability and accuracy of Kubelka-Munk spectral transmittance is lower than absolute transmittance for translucency characterization of resin composites.

## - Oral Presentation 22

**TITLE: All-ceramic oral restoration. one smile, several materials**

**AUTHORS: Faci Martín B, Faus Matoses V, Faus Matoses I, Alegre Domingo T, Faus Llácer VJ.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S11.**

\* doi:10.4317/jced.17643806

<http://dx.doi.org/10.4317/jced.17643806>

## Introduction

According to the composition of ceramic systems, they have different properties and applications. The correct use of ceramic materials depends on several factors, including the clinician's ability to choose restorative materials, restoration manufacturing method, teeth preparation technique, cementing technique and individual patient needs.

In some clinical situations, the use of a single material would be enough, but sometimes it may be necessary to combine several types of materials to obtain the best restorative treatment outcome.

## Case report

60-years-old woman presented to our dental practice to improve the aesthetic of her smile.

Clinical and radiographic examinations revealed a root canal treatment on 2.1 with dark discoloration, a root canal treatment failure due to a root fissure on 2.2 and leaked dental fillings on 1.1, 1.2 and 1.3.

The treatment consisted of the extraction of 2.2, root canal retreatment and posts restoration on 2.1 and dental fillings on 1.1, 1.2 and 1.3.

The initial provisionalization was carried out through a temporary ovate pontic fixed partial denture on 2.1 to 2.3 and temporary veneers on 1.1, 1.2 and 1.3. Made of polymethylmethacrylate using CAD/CAM system. A second temporary ovate pontic fixed partial denture was positioned in order to contour the 2.2 surrounding soft tissues.

Six months later, temporary restorations were removed and an alumina based definitive fixed partial denture on 2.1 to 2.3 and feldspathic laminate veneers on 1.1, 1.2 and 1.3 were placed.

## Conclusions

The anterior teeth restoration was achieved meeting the functional, aesthetic and biomechanical expectations of both, the patient and the professional, by means of different types of ceramic materials.

## - Oral Presentation 23

**TITLE: Efficiency and effectiveness of retreatment with Thermafil Plus, Guttacore and vertical condensation**

**AUTHORS: Fenellós-Aldea L, Alegre-Domingo T, Faus-Matoses V, Faus-Llácer VJ.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S11.**

\* doi:10.4317/jced.17643807

<http://dx.doi.org/10.4317/jced.17643807>

## Objectives

The purpose was to evaluate the efficiency and the effectiveness in retreatment depending on the obturation system: Guttacore, Thermafil, and warmed vertical gutta-percha condensation using Calamus, with ProTaper files retreatment.

## Materials and Methods

It was executed in one hundred and five extracted teeth with one root canal. The cusp tip was reduced with a disc with working lengths set at 15 mm.

During preparation and between each file, 1 mL of 5.25% sodium hypochlorite was used as an irrigant. The canals were all prepared until F3 ProTaper file, lately, teeth were randomly allocated in three groups depending on the obturation material utilized: Thermafil, Guttacore and warmed vertical condensation. In all groups, the canal was coated with a thin layer of AH Plus root canal sealer.

Every canal was instrumented using ProTaper Retreatment files: D1, D2 and D3. To calculate the efficiency, the total time of all files to reach the working length was scored. The retreatment procedure was considered complete when no obturation material was observed on the last file. The efficacy was evaluated in terms of the remaining amount of the sealing material after the procedure.

Data were analyzed using SPSS (SPSS 15.0 Inc., Chicago, IL) with a p value < 0.05 and it was used ANOVA test and a Chi-square analysis.

## Results

The mean time to reach working length was significantly shorter for Guttacore than Thermafil ( $p < 0.05$ ). There was significantly more debris remaining in the apical third compared to the coronal and middle thirds in all groups ( $p < 0.05$ ).

## Conclusions

The Guttacore system requires less time than other sealing systems to reach the working length using Pro-taper files during the retreat. However, it was the group obturated with Calamus system which presented less obturation material remaining.

## - Oral Presentation 24

**TITLE: Orthodontic extrusion, an alternative to reconstitute the biologic width to the anterior sector**

**AUTHORS: Fernández B, González J, Escribano N, Gomes G, Da Silva D, Fuentes MV, Míguez M, Ceballos L.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S12.**

\* doi:10.4317/jced.17643808  
<http://dx.doi.org/10.4317/jced.17643808>

## Introduction

The restoration of anterior teeth presenting an invasion of the biologic width implies a challenge to the clinician, since it is essential the reposition of the preparation margin prior to the prosthetic treatment.

One of the possibilities is to perform a forced orthodontic extrusion to allow margin displacement without alteration of the gingival contour of the teeth nor bone elimination.

## Case report

We will describe a clinical case of a patient, a 43 year-old woman, that came to the Rey Juan Carlos University Clinic in search of a solution for a chronic gingival swelling in her tooth 11 after an crown had been placed.

Once the exploration was performed it was determined that both the old crown and the preformed metallic post had to be removed and the root canal treatment redone. Once the coronal portion had been restored with composite and a fiber glass post, a provisional crown made of acrylic resin was placed.

Due to the invasion of the biologic width, it was decided that a forced orthodontic extrusion of the incisor should be performed. Following the stabilization period we proceeded to restore the tooth with a zirconia

corecrown. In the subsequent revisions the absence of gingival swelling and the aesthetical integration of the artificial crown were observed.

## Conclusions

The orthodontic extrusion is a restorative alternative to crown lengthening for those cases where a change in the gingival countour of the treated tooth is not desirable.

## - Oral Presentation 25

**TITLE: Pulp revascularization with triple antibiotic paste apropos of a case**

**AUTHORS: Fernández Pazos G, Fernández Millán D, Souto Míguez A, Rivas Mundiña B, Martín Biedma B, Varela Patiño P.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S12.**

\* doi:10.4317/jced.17643809  
<http://dx.doi.org/10.4317/jced.17643809>

## Introduction

Pulp revascularization is a treatment that allows the development of roots in permanent teeth with immature apex whose pulp is not vital. It consists of disinfection system of root canals and insertion of a triple antibiotic paste. Subsequently a natural matrix composed of a blood clot is going to provide new cells with the ability to grow and produce the closure of the apical third, achieving the physiological formation of the root canal.

## Case report

An 11-year-old boy, comes to consultation for caries in 3.6. The relevant diagnostic tests were performed that confirm the definitive diagnosis: pulp necrosis. The anesthesia of choice is without vasoconstrictor, Mepivacaine 3%. A manual pre-instrumentation was performed with K-files #20 and each canal was irrigated with 20ml of 5.25% NaOCl for 20 minutes. Canals were gently dried with paper points and a triple antibiotic paste was placed inside all of the canals with a K-file size #25: Metronidazole, Ciprofloxacin and Minocycline from 3mm before the apex. The tooth was restored temporarily with Cavit. At the 3-week follow-up, the temporary restoration was removed and the triple antibiotic paste was removed from the canals by 10ml irrigation of 5.25% NaOCl per canal. Apical tissues were irritated until bleeding by using K-file #40 in distal canal and K-file #20 in mesial canals. After 10 minutes, the entry of the canals was filled with MTA. For the final restoration, 2mm fluid composite were placed over the MTA and the direct restauration was performed with composite. The patient was checked at 3, 6, 12, 18 and 24 months. The molar is asymptomatic and functional.

### **Conclusions**

Pulp revascularization by tri-antibiotic paste represents a therapeutic alternative to endodontic treatment under favorable conditions.

Such treatments allow to keep the tooth functional and asymptomatic.

### **- Oral Presentation 26**

**TITLE: Reattachment of a metal-ceramic crown using orthodontic extrusion. A case report**

**AUTHORS: Fernández Sánchez B, González Serrano J, González Serrano C, Ceballos García L.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S13.**

\* doi:10.4317/jced.17643810

<http://dx.doi.org/10.4317/jced.17643810>

### **Introduction**

Orthodontic root extrusion, or forced eruption, was first described by Heithersay in 1973. The target of this movement was to raise the fractured root surface from within the alveolar bone to a yuxta or supragingival position. This is achieved by providing a horizontal component, (usually a wire attached to the adjacent teeth), from which a vertical force is then exerted on the root. It is indicated in any cervical third root problem that involves or extends 0–4 mm below the crest of the alveolar bone, including horizontal fractures, caries, resorption defects and iatrogenic perforations of the coronal third of the root, unattached crowns...

### **Case report.**

A 43 years old woman was seen in Rey Juan Carlos University (Madrid, Spain) with a gingival inflammation due to an unattached metal-ceramic crown around the tooth 11. We proceeded to orthodontic extrusion for 5 months, then a gingivectomy was performed and finally a zirconium fixed prosthesis was placed.

### **Conclusions**

When a subgingival adaptation defect appears, it is difficult to maintain good oral hygiene, making the tooth susceptible to leakage, jeopardizing treatment outcome.

The role of orthodontic extrusion is essential in such situations to achieve a yuxtagingival margin. It is important to maintain a final crown-to-root ratio of at least 1:1, to ensure adequate periodontal support.

### **- Oral Presentation 27**

**TITLE: A new system of rotary instrumentation: F360®**

**AUTHORS: Centenera Centenera B, Mena Álvarez J, Rico Romano C, Zubizarreta Macho A.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S13.**

\* doi:10.4317/jced.17643811

<http://dx.doi.org/10.4317/jced.17643811>

### **Introduction**

The rotary instrumentation is directed not only to the endodontist, but to the general dentist who seeks to improve his results in day after day, and we meet the systematic appearance of new rotary systems.

### **Case report**

Presentation of the sequence of instrumentation of the new rotary files f360®.

to visualize cross-sectional design and tip configuration, by images of sem (scanning electron microscope) to document his use in two clinical cases of lower molars carried out with the clinical sequence recommended by the manufacturer and the possible variations to introducing in the daily clinic.

### **Conclusions**

System formed by two files of the only use with constant rotary movement and packed sterilized. Non-cutting tip with section in S italic, without preflaring's file in the system and with final file with taper 4 % and apical diameter 35.

The system F360 is formed by two file of the only use that make possible a decrease of the index of fracture for his flexibility and avoid the possibility of crossed pollution. The system might need incidental files to be able to carry out a previous glide path and increase taper of preparation to be able to combine with vertical condensation techniques

### **- Oral Presentation 28**

**TITLE: Analysis of hypochlorite extrusion based on different final irrigation systems**

**AUTHORS: Garrido García M, Montalvo Sánchez N, Pérez-Higueras Sánchez-Escalonilla JJ, Reboloso De Barri E, Martín González D, García Barbero E.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S13.**

\* doi:10.4317/jced.17643812

<http://dx.doi.org/10.4317/jced.17643812>

## Objectives

To quantify and determine the extrusion of sodium hypochlorite for different final irrigation systems used in semi-closed environment, simulating the periodontal ligament

## Materials and Methods

48 human single-root teeth extracted for orthodontic or periodontal reasons were selected. They were cut at cement-enamel junction and the root portions were embedded in an agarose 0.3 % colloidal gel placed in individual transparent methacrylate boxes. Six experimental groups were established: needle -1 mm of the working length, needle -4 mm of the working length, EndoActivator, EndoVac, WaterPik power flosser and ultrasonic activation. The samples were randomized and were endodontically treated using PathFlie®, Pro-Taper® (Until F2) and Profile® (35.04), and were instrumented following the same protocol of irrigation. The final irrigation was different depending on the group. A mixture of sodium hypochlorite 5.25% and methylene blue was used as irrigant (96% of sodium hypochlorite and 4% of methylene blue).

During instrumentation phase, blue irrigant mixture was extruding through the apical foramen and was created a blue different size periradicular area. Two pictures of each sample were taken, the first one at the end of the instrumentation phase and the other one after the final irrigation. The size of these areas was quantified by ImageTool® 3.0 analyzer. The results were subjected to statistical analysis using Kruskal Wallis test for multiple comparisons and Wilcoxon test for paired samples, by the IBM SPSS 22 program.

## Results

There were statistically significant differences in the extrusion recorded after the final irrigation in three groups: needle -1 mm of the working length, WaterPik and ultrasound. In needle -4 mm of the working length, EndoVac and EndoActivator groups there were no differences when compared with prior recorded extrusion.

## Conclusions

Although there are differences in the degree of extrusion of different final irrigation systems employees, most of the extrusion of the irrigant it was produced during the instrumentation of the root canals.

## - Oral Presentation 29

**TITLE: Effect of adhesive expiration day on bond strength**

**AUTHORS: Garcia Belando A, Teruel Rodriguez A, Alegria Anierte A, Cabello Colas M, Chiva Garcia F.**  
**SOURCE: J Clin Exp Dent. 2014 1;6( Supplement1):S14.**

\* doi:10.4317/jced.17643813

<http://dx.doi.org/10.4317/jced.17643813>

## Objectives

To evaluate the dentin shear bond strength of 3M ESPE adhesive systems: Adper Scotchbond Multi-Purpose (expired in 2015) and Scotchbond Multi-Purpose (expired in 1999).

## Materials and Methods

Sixteen permanent posterior teeth were randomly assigned to two groups (n=8 each) : (1) non-expired adhesive and (2) expired adhesive. Flat dentinal labial surfaces were carved and adhesives were applied on the dentinal surface accord to manufacturer instructions.

Filtek Supreme A3 body (3M) composite cylinders (4 mm diameter; 2 mm high) were polymerized 20 seconds on the treated dentin surface.

After 24 hours of immersion in water at 37° C , shear bond strength was performed using a universal testing machine (Autograph AGS- 1KND, Shimadzu, Japan) at a crosshead speed of 1mm/min.

Data were analyzed by t-test at an alpha level of 0,05 using SPSS v.12.

## Results

The shear bond strength of unexpired adhesive (18,33 MPa;SD 1,59) was higher than expired adhesive (8,69 Mpa; SD 3,55). Significant differences were observed between groups (p>0,001).

## Conclusions

As expected, expired adhesive system presented lower bond strength than unexpired adhesive system.

## - Oral Presentation 30

**TITLE: Six-month clinical evaluation of a universal adhesive**

**AUTHORS: Giráldez I, Fuentes MV, Baracco B, Ceballos L, Perdigo J.**  
**SOURCE: J Clin Exp Dent. 2014 1;6( Supplement1):S14.**

\* doi:10.4317/jced.17643814

<http://dx.doi.org/10.4317/jced.17643814>

## Objectives

To compare the 6-month clinical performance of a “universal” adhesive in non-carious Class V lesions using four different adhesive strategies.

## Materials and Methods

21 patients participated in this study, in which 70 Class V restorations were placed. The restorations were randomly assigned into four experimental groups according to different adhesive strategies of Scotchbond Universal Adhesive (SBU, 3M ESPE): A. 3-step etch-and-rinse: 34% phosphoric acid (PA, Scotchbond Universal Etchant, 3M ESPE) and application of SBU followed by one coat of the non-solvated bonding resin Scotchbond Multi-Purpose Adhesive (SBMPA, 3M ESPE); B. 2-step etch-and-rinse: 34% PA followed by SBU; C. 2-step self-etch: SBU followed by one coat of SBMPA; D. 1-step self-etch: SBU alone. All restorations were evaluated at baseline and after 6 months by two blind observers using the USPHS criteria. Statistical analysis was performed with the non-parametrical tests Kruskal-Wallis, Mann Whitney U and Wilcoxon ( $p < 0.05$ ).

## Results

Only one restoration from the group 1-step/SBU was lost at six months. Marginal adaptation was the only criterion for which statistically worse scores were measured after 6 months ( $p < 0.01$ ). Significantly more bravo scores were detected when SBU was used following a self-etch strategy. The restorations performed with SBU as 1-step self-etch adhesive exhibited a significantly deterioration of the marginal adaptation after 6 months.

## Conclusions

Restorations performed with SBU under a self-etch strategy showed worse marginal adaptation after 6 months of clinical use compared to those with SBU under an etch-and-rinse strategy. The addition of a non-solvated hydrophobic coating (SBMPA) did not influence the clinical performance.

## - Oral Presentation 31

**TITLE: Endodontic treatment for avoiding an inferior alveolar nerve paresthesia**

**AUTHORS: Gómez Álvarez G, Gómez Martín C, Del Valle Alexandre B, Zorita García M, Mena Álvarez J.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S15.**

\* doi:10.4317/jced.17643815

<http://dx.doi.org/10.4317/jced.17643815>

## Introduction

In some cases, the proximity of the inferior alveolar nerve to the lower molars roots causes that when we face chronic apical periodontitis with pulpal origin, it might exist an inferior alveolar nerve affectation because of the invasion of the mandibular canal by the injury. An accurate diagnostic of the situation of that injury will be the key in the plan of treatment we should make.

## Case report

A 69 year old male patient comes to consulting room asking for a routine consultation. With a first visualization of his ortopantomography, we can see the tooth number 4.7 affected of a chronic apical periodontitis which overlaps with the canal of the alveolar inferior nerve. This overlapping is then better appreciated using a periapical radiography. The patient is completely asymptomatic.

It is decided to do a Cone Beam Computed Tomography (CBCT) to see the injury's location; it is localized in a lingual position of the mandibular canal, starting to invade it and breaking the lingual plate.

Then we proceed to remove the metal crown the patient is wearing in that tooth, and after an evaluation of the remaining tooth under the metal crown, we proceed with the root canal treatment.

When we face these kind of injuries that are overlapping the alveolar inferior nerve canal, we should be careful and make an appropriate diagnostic, with the aim of getting success of the treatment; a quick action in these casual findings will avoid major injuries, being very important the following in the future of these kind of injuries.

## Conclusions

The use of Cone Beam Computed Tomography (CBCT) is essential when we find this kind of overlappings, allowing three dimensional visualization. Root canal treatment is able to avoid higher pathologies, such as paresthesias, obtaining bone regeneration in the area and thus improving patient's health.

## - Oral Presentation 32

**TITLE: Application of Bioinformatics in the Mount/Hume classificacion of caries and his relationship with Orthopantomography**

**AUTHORS: Hernando Dumaraog B, De Paz JF, Corchado JM, García E, Aliaga I, Campo L, Vera V.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S15.**

\* doi:10.4317/jced.17643816

<http://dx.doi.org/10.4317/jced.17643816>

### Objectives

The incorporation of computational techniques and artificial intelligence in the area of biomedicine has made remarkable progress in the prevention and detection of diseases. Decision trees are a prediction model used in the field of artificial intelligence that provides a human expert information, a caries classification in this study, made by the system, generating rules that will support decision making.

Dental caries is one of the most prevalent infectious diseases in patients and the diagnosis is made by dentists using clinical and radiological examination.

The aim of this study is to analyze the relationship between the Mount/Hume classification of caries and Orthopantomography x-ray.

### Materials and Methods

The study was realized on fifty patients who attended to the triage of the School of Dentistry in the Complutense University of Madrid and performed by a faculty of the department of Conservative Dentistry. After clinical examination and radiological study, all the findings were uploaded in patient's chart, the data collected is sent to the University of Salamanca to be analyzed by Bioinformatics.

### Results

Three decision trees were generated by the algorithm J48. Decision tree number two, associated the variables size and location of the lesion using the Mount/Hume classification and radiographic variable.

### Conclusions

Decision trees are a simple tool that allows us to visualize and analyze the relationship between the Mount/Hume classification of caries and extraoral radiographic study.

Decision trees used in this study highlight the need for the use of the panoramic radiograph for classifying caries sizes 2, 3 and 4 and location 2 of Mount/Hume and not in sizes 0 and 1 that require more specific diagnostic tests.

## - Oral Presentation 33

**TITLE:** Evaluation of the shades in the space ciel-ch of amaris composites

**AUTHORS:** Guzmán Pina S, Funes Gil I, Fernández Sánchez G, Chiva García F.

**SOURCE:** J Clin Exp Dent. 2014 1;6 (Supplement1):S16.

\* doi:10.4317/jced.17643817

<http://dx.doi.org/10.4317/jced.17643817>

### Objectives

To evaluate color change parameters in space Ciel-ch of Amaris(VOCO®) dentin composite resin when adding its enamel colors

### Materials and Methods

45 discs, 2mm thick and 6 mm in diameter were created of Amaris dentin shade, and divided in 5 groups: group1-shadeO1, group2-shadeO2, group3-shadeO3, group4-shadeO4 and group5-shadeO5. In each group (n=9) we added to the dentin shade disks, 1mm of Amaris enamel shade (TL, TN, TD), obtaining 3 discs per group of each enamel shade. The color parameters (L, c, h) were determined with the composite-resin light-cured, by a spectrophotometer EasyShade(Vita®), before and after adding the enamel shade. The results were analyzed by comparing the variances (ANOVA) with statistic package SPSS-v.15

### Results

In groups 4 and 5, all enamel shades increased significantly its lightness (L) ( $p < 0.001$ ). In group 3 there were no significant differences ( $p = 0.08$ ), in group 2 there was only a significant increase in the shade TL ( $p = 0.03$ ), and in group 1 there was an increase with the shade TL but a decrease with the shade TN and TD ( $p = 0.02$ ). Regarding chroma (c), all 5 groups decreased significantly when placing the 3 enamel shades. As for hue (h) there was not significant decrease in groups 2 ( $p = 0.05$ ) and 5 ( $p = 0.17$ ). In groups 3 and 5, only the enamel shade TL presented significant differences ( $p = 0.001$ ). In group 1, all 3 enamel shades presented a significant difference ( $p = 0.002$ ). The correlation with Vita® shades was A3.5 for 2mm of dentin shades O1, O2 and O3, and A4 for shades O4 and O5. For 1mm of enamel shades, its correlation was A2 for TN, B1 for TL and A1 for TD.

### Conclusions

The placing of 1mm thickness of enamel shade, decreased the chroma of the dentin shades. The shade TL increased the lightness but the shade TD did not decrease it.

## - Oral Presentation 34

**TITLE:** Endodontic failure due to forgotten duct : a series of cases

**AUTHORS:** García Marcos JI, Santos Cubero J, Alonso Ezpeleta LO, Mena Alvarez J.

**SOURCE:** J Clin Exp Dent. 2014 1;6 (Supplement1):S16.

\* doi:10.4317/jced.17643818

<http://dx.doi.org/10.4317/jced.17643818>

## Introduction

The presence of isthmus and anatomic variations on the root canal system causes lots of endodontic failure.

## Case report

We present a serial of cases. Patients come to the Alfonso X el Sabio Dental Hospital. Patients arrive with pain when percuted on the root canal treated tooth witch also presents vital response to stimulations. That's the reason why non quirurgical retreatment is the option to solve these discomfort. Lots of endodontic failures are due to diagnostic errors and therefore wrong acces to locate all ducts. Missed ducts will bring symptoms due to a tube that was not promptly located. Endodontic failure due to forgotten ducts rises to 19.7%. These epidemiological rates suggest we are aware of them especially on first superior molars in wich these rates raise up to 96% when searched invitro.

## Conclusions

Endodontic treatment should aim to achieve not only symptomatic or radiographic success , but also the histological success. This requires having a good teorical base on the anatomy and morphology of root canals. Also it's needed a good accuracy when the radiographic location of the ducts and anatomical aberrations are present.

## - Oral Presentation 35

**TITLE: MTA repair of an iatrogenic perforation: a case**

**AUTHORS: Garci ía Sanz I, Abad Abad A, Reviejo Fragua M.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S17.**

\* doi:10.4317/jced.17643819

<http://dx.doi.org/10.4317/jced.17643819>

## Introduction

Furcal perforations are significant iatrogenic complications of endodontic treatment and could lead to endodontic failure. Mineral trioxide aggregate (MTA) has been regarded as an ideal material for perforation repair, retrograde filling, pulp capping, and apexification; setting aside other materials like the silver amalgam, IRM o SuperEBA.

## Case report

This case report describes a furcal perforation in a mandibulary first molar of a female patient aged 22 that came to the Master of Endodontic and Restorative Dentistry of Rey Juan Carlos University. She presented

a metal - ceramic crown, a root canal treatment and a metal screwed pin in distal root of tooth 36. In the X-ray image, it was seen radiolucency in furcation area and distal root. It was made a CBCT to confirm the suspicion of perforation caused by the pin. The proposed treatment plan was endodontic retreatment, perforation sealing with MTA and a temporary crown placed for 6 months to control evolution.

The pin was removed with ultrasonic tips and the gutta-percha was removed with Reciproc 25 (VDW). The mesial root canals were sealed with Elements Obturation Unit (Sybron Endo). The distal root canal was sealed in its apical third with guttapercha and the rest with gray MTA (Angellus). The pulp chamber was sealed and core build with resin composite (Filtek Supreme XTE shade A3, 3M ESPE) and then it was made a provisional crown with Bis acryl Protemp resin (3M ESPE).

## Conclusions

After 6 months, the decrease of periradicular radiolucent lesions, the pain absence and the functional tooth stability indicated a successful outcome of sealing perforation. Therefore, MTA may be considered the material choice due to its biocompatibility, antibacterial activity and sealing ability.

## - Oral Presentation 36

**TITLE: High smile line aesthetics with interdisciplinary restorative-periodontal treatment and digital smile design**

**AUTHORS: Garcia-Gimenez L, Faus-Matoses V, Faus-Matoses I, Alegre-Domingo T, Faus-Llácer VJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S17.**

\* doi:10.4317/jced.17643820

<http://dx.doi.org/10.4317/jced.17643820>

## Introduction

A clinician must fully understand the various considerations when treating an excessive gingival display case: the simetric and regular gingival margins, the correct parallelism with the incisal line, the zenith exact position and the shape of the interdental papilla. The Digital Smile Design allowed both interdisciplinary communication between the restorative dentist/ periodontist/ dental technician and the preview of the final result, which helped with treatment plan presentation to the patient, their motivation and acceptance of the treatment.

## Case report

A 26-year-old woman presented to the dental clinic for a cosmetic consultation. She had been treated in another

dental practice with orthodontic braces for 3 years and with overfilled composite restorations from 12 to 22. An initial approach with Digital Smile Design treatment plan was made, from 15 to 25, as she refused to go through another orthodontic therapy. For an economical reason she decided to proceed just with the 4 upper incisors. It was performed a gingivectomy in order to relocate the zenith position and decrease the excess of keratinization of the attached gingiva. Temporary resin composite, Integrity (Dentsply, De Trey, Konstanz, Germany) was used and replaced later by permanent feldspathic veneers (Norikate, Japan). Calybra (Dentsply, De Trey, Konstanz, Germany) cement was used as a permanent cement, Prime & Bond NT (Dentsply, De Trey, Konstanz, Germany) as a bonding agent and conditioner 36 for the etching procedure.

### Conclusions

The interdisciplinary team approach is critical to allow in a predictable way, the diagnosis and the treatment plan in order to execute in a conservative way an excessive gingival display case.

## - Oral Presentation 37

**TITLE: Ortho-conservative treatment of attrition with microimplants and composites**

**AUTHORS: Gómez-Pérez P, Faus-Matoses V, Faus-Matoses I, Alegre-Domingo T, Faus-Llácer VJ.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S18.**

\* doi:10.4317/jced.17643821  
<http://dx.doi.org/10.4317/jced.17643821>

### Introduction

Attrition is the weathering of dentition as a result of the occlusal contact between upper and lower teeth. This process may expose the dentinal tubules causing dentinal hypersensitivity. The treatment consists of sealing the dentinal tubules. An interdisciplinary management allows performing a conservative treatment for dentinal hypersensitivity caused by attrition.

### Case report

33-year-old woman presented at the clinic complaining of hypersensitivity during chewing on tooth 1.7. After clinical and radiographic exploration, occlusal attrition and compensatory extrusion of tooth 1.7 was observed, being the cause of dentinal hypersensitivity. A conservative treatment through the intrusion of tooth 1.7 with vestibular and palatine microimplants Abs Anchor (Dentos Co, Taegu, South Korea) was chosen. Vestibular microimplant 8 mm long placed on free gingiva,

palatal microimplant 10 mm long placed distal to tooth 1.7 on attached gingiva.

Intrusion was carried out after 6 months. Free interocclusal space was leaved for the subsequent direct composite restoration avoiding the preparation of the tooth. After removing the microimplants, a direct restoration of the tooth using total-etch adhesive XP Bond (Dentsply De Trey, Konstanz, Germany) and composite resin Ceram-X Duo 3 (Dentsply De Trey, Konstanz, Germany) was done.

### Conclusions

After an interdisciplinary and minimally invasive treatment, through the intrusion with microimplants and a direct composite restoration, dentinal sensitivity disappeared, satisfying the expectations of both patient and operator.

## - Oral Presentation 38

**TITLE: Multidisciplinary planning, the importance of diagnosis. A case report**

**AUTHORS: Gómez Álvarez G, Gómez Martín C, Zorita García M, Alonso Ezpeleta LO, Mena Álvarez J.**

**SOURCE: J Clin Exp Dent. 2014 1;6(Supplement1):S18.**

\* doi:10.4317/jced.17643822  
<http://dx.doi.org/10.4317/jced.17643822>

### Introduction

Nowadays, a large number of treatments are interdisciplinary in dentistry, that's why the resolution of a case must involve different experts in different fields of dentistry, one of them will guide the treatment plan according to disease that have to be treated

### Case Report

25 years old female patient, attended to Alfonso X el Sabio dental hospital, For "fix her teeth" is presented. Following the complete dental check-up is referred to orthodontic and implantology department assessment of class II/II with 15mm projection, periodontal status and replacement of absences respectively. Finally endodontist assessing is required to possible realization of root canal treatment in mandibular incisors in order to preserve alveolar ridge for future implant rehabilitation alter orthodontic treatment.

### Conclusions

The growing demand for dental treatment by adult patients with multiple disease makes interdisciplinary collaboration essential. This collaboration may results in changes on the treatment plan.

Before orthodontic treatment, the endodontist must diagnose and treat endodontic pathology if it's present. Should also assess the suitability of previous endodontic treatments.

### - Oral Presentation 39

**TITLE: Endodontic surgery in teeth with apical radiolucent lesion**

**AUTHORS: Guerra Caamaño M, González Bahillo J, Fernández Pazos G, Varela Patiño P, Martín Biedma B.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S19.**

\* doi:10.4317/jced.17643823

<http://dx.doi.org/10.4317/jced.17643823>

#### Introduction

The endodontic surgery is an alternative of treatment when endodontic therapy has failed. It includes the surgical removal of pathological periapical tissue. Root-end resections of 3 mm are usually done to eliminate possible canal ramifications, and it is done, properly, the sealing of the root canal. Seeks, in this way, create optimum health, tissue regeneration and formation of a new support system for tooth.

#### Case report

A female, 48 years old, comes to the clinic of the Master of endodontic for a re-endodontic therapy in 1.2. Present, radiographically, an apical radiolucent lesion. Has been done the endodontic retreatment (February 2013). The apicals 6 mm have been sealed with MTA, and the rest of the root canal with thermoplastic guttapercha. In January 2014, it is verified that the apical lesion has not diminished after endodontic retreatment. Therefore, it was decided to perform endodontic surgery, in the following way: incision with surgical knife number 11 and 15; retraction of the flap Luebke-Ochsenbein; osteotomy; root-end resection (3 mm); curettage of periapical cyst; insertion of heterologous bone mixed with tetracycline and serum; placing the membrane for regeneration of vestibular tissue; and, finally, the suture, which is removed the following week. In subsequent revisions, the favorable evolution of the patient was found.

#### Conclusions

Endodontic surgery is effective. With his embodiment, the periapical lesion was removed, which, in this case, it is independent of the tooth.

In many cases periapical lesions will require surgery in addition to endodontic treatment.

When healing do not occurs with endodontic therapy, we must proceed to surgical treatment of the tooth with apical radiolucent lesion.

### - Oral Presentation 40

**TITLE: Immediate adhesive properties to dentine of two multi-mode adhesives with different adhesion strategies**

**AUTHORS: Hurtado Fernández A, Cura M, Elvira Gómez P, Fuentes MV, Ceballos L.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S19.**

\* doi:10.4317/jced.17643824

<http://dx.doi.org/10.4317/jced.17643824>

#### Objectives

“Universal” or “multi-mode” adhesives can be applied either with the etch-and-rinse or the self-etch technique. Objectives: The purpose of this study was to determine the bond strength and nanoleakage of two universal bonding agents using different bonding techniques on human coronal dentine in comparison with a self-etch adhesive.

#### Materials and Methods

30 extracted caries-free human molars were assigned to five groups: 1- A two-step self-etch adhesive (control), Clearfil SE Bond (Kuraray); the “universal” adhesive Xeno Select-SE (Dentsply), a 2-step self-etch adhesive; 2- Xeno Select-SE (Dentsply), applied as a one-step self-etch adhesive; 3- Xeno Select(Dentsply) applied as a 2-step etch-and-rinse adhesive; 4- the “universal” adhesive Scotchbond Universal Adhesive (3M ESPE), applied as a one-step self-etch adhesive; 5 - Scotchbond Universal Adhesive (3M ESPE) applied as a 2-step etch-and-rinse adhesive. Adhesives were applied following manufacturer's instructions. Crowns were constructed applying three increments of Filtek Z250 resin composite. Specimens were stored in sodium azide (24h, 37°C) and subsequently prepared for  $\mu$ TBS and nanoleakage testing. Data were analyzed by one-way ANOVA and SNK tests ( $p < 0.05$ ).

#### Results

$\mu$ TBS mean values in MPa (standard deviation, sd) are shown in the table. Clearfil SE Bond resulted in significantly higher mean  $\mu$ TBS (60,37 MPa), followed by Scotchbond Universal Adhesive applied as a 2-step

Group	Bond Strength (sd) MPa
G1.Clearfil SE Bond	60,37(36,1) 1
G2.Xeno Select- Self-Etch	12,8 (12,7) 4
G3.Xeno Select- Etch-and- Rinse	22,86 (22,6) 3
G4.Scotchbond Universal -Self-Etch	42,1 (31,8) 2
G5.Scotchbond Universal - Etch-and- Rinse	54,57 (31,5) 1

etch-and-rinse adhesive. The lowest mean  $\mu$ TBS were obtained with Xeno Select.

### Conclusions

Clearfil SE and Scotchbond Universal applied as a 2-step etch-and-rinse adhesive had greater bond strength to dentin than Scotchbond Universal applied as a one-step self-etch adhesive and Xeno Select. The new universal adhesive Xeno Select, had lower bond strength, particularly applied as a one-step self-etch adhesive.

## - Oral Presentation 41

### TITLE: Biofilm influence in endodontic therapy

**AUTHORS:** García Álvarez M, Zubizarreta Macho A, Rico Romano C, Sierra Armas L, Mena Álvarez J.

**SOURCE:** J Clin Exp Dent. 2014 1;6 (Supplement1):S20.

\* doi:10.4317/jced.17643825

<http://dx.doi.org/10.4317/jced.17643825>

### Objectives

One of the most frequently ways that provoke the failure of the endodontic therapy is the secondary infection from the bacterial biofilm.

The objective of this study is to compare the action of the different irrigations agents using several activation technologies.

### Materials and Methods

Two microbiological samples were gathered for the roots, 18 single-rooted teeth, that need root canal treatment. The first sample was taken immediately after realizing the opening of the Crown, the second sample after the root canal treatment, after the dried and the activation of the corresponding irrigations agent. Attending to the different irrigations agents and technologies of activation selected, the following groups of study decided: Group 1: sodium hypochlorite 5,25% and sonic activation. Group 2: chlorhexidine digluconate 0,2% and sonic activation. Group 3: sodium hypochlorite 5,25% and ultrasonic activation (IRRIS tips). Group 4: chlorhexidine digluconate 0,2% and ultrasonic activation (IRRIS tips). It is important to note that the sodium hypochlorite 5,25% became inactive with sodium thiosulfate, and the chlorhexidine digluconate with Lecithin and Tween 80. It was followed by sows of samples on blood agar and bile esculin. The statistical evidence of U Mann-Whitney was used, because the variable don't follows the normal distribution.

### Results

Once the relative reductions table has been made of each one of the samples with the combination of the irrigations agents and the desactivation techniques, we conclude that there is no statistically significant differences between irrigations agents and irrigation technologies.

### Conclusions

The use of sodium hypochlorite 5,25% is recommended, vibrated with sonic or ultrasonic activation, given the potential to remove the organic or inorganic tissue.

## - Oral Presentation 42

### TITLE: Separated file fragment. Case report

**AUTHORS:** García Bravo M, Conde Pais J, Amorós Carazo C, Ortega Molina A, González Villafranca P, Armenteros Pérez A, González López S.

**SOURCE:** J Clin Exp Dent. 2014 1;6 (Supplement1):S20.

\* doi:10.4317/jced.17643826

<http://dx.doi.org/10.4317/jced.17643826>

### Introduction

Intracanal endodontic instruments fracture may hinder or prevent the cleaning and shaping of root canals, with a negative influence in the treatment success.

In this poster we show a separated instrument case report, in which we accomplish root canals cleaning and filling and the final reconstruction.

### Case report

A 21 year-old male with no relevant medical history, who was referred to the Master for the treatment of a molar with a fractured instrument in the middle third of the canal, while the buccal mesial canal treatment was in process. The file fragment was removed by using a rotary file system and ultrasonic tips.

### Conclusions

Currently, a performance protocol for managing this kind of cases is not available. Therefore, it is necessary to consider the following aspects regarding adequate outcomes: 1) Root morphology, 2) Canal root preparation phase, 3) Clinician experience, 4) Available instrumental, 5) Tooth strategic value and 6) Periapical pathology.

## - Oral Presentation 43

### **TITLE: Endodontic retreatment and posterior restorative treatment using composite veneers**

**AUTHORS: Jiménez Martínez J, García Bravo M, Conde Pais J, Valenzuela Triviño V, Costas Soto A, Rosel Gallardo E, Castillo Salmerón R.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S21.**

\* doi:10.4317/jced.17643827

<http://dx.doi.org/10.4317/jced.17643827>

#### **Introduction**

Although extraction-implant option has become increasingly popular to solve problems produced by endodontic treatment failure, maintaining natural dentition in healthy conditions remains the aim in dentistry. The success of root canals treatment is based on proper cleaning, shaping and three-dimensional filling. Recent studies concluded that while endodontic surgery offers more favorable initial success, the nonsurgical retreatment was provided superior long-term outcome.

Through this case report we show the nonsurgical retreatment of 21, with subsequent internal bleaching and the reconstruction with composite veneers of both central incisors.

#### **Case report**

A 22 year-old female with no relevant medical history, who came to the Master (UGR) demanding an aesthetic treatment in the anterior zone. The patient presented composite restorations in poor condition on both central incisors, and a root canal treatment with improper apical filling and a metal pin in tooth 21.

Due to the patient's aesthetic requirement, restorative treatment with composite veneers was performed in both central incisors and a previous nonsurgical retreatment of 21 to ensure the viability of long-term treatment.

#### **Conclusions**

In conclusion, we consider root canal retreatment is first choice to solve these cases and the restoration using composite veneers provide us the aesthetic we wanted to offer the patient a conservative treatment, reaching her expectations

## - Oral Presentation 44

### **TITLE: Indirect inlay and onlay resin as minimally invasive treatment**

**AUTHORS: Liste Grela S, Gómez Meda R.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S21.**

\* doi:10.4317/jced.17643828

<http://dx.doi.org/10.4317/jced.17643828>

#### **Introduction**

Dental materials that are available are constantly evolving due to the improvement of its mechanical and aesthetic properties, provide ample possibilities to make minimally invasive and resistant restorations. Reinforced resins and indirect technique for processing are more and more used. The dental technician also changes its process of developing dental reconstructions resin layering techniques and digital design techniques for CAD-CAM.

#### **Case report**

The material selected in various clinical cases described, it is the SR Nexco (Ivoclar-Vivadent, Schaan-Liechtenstein). It is a laboratory composite with opalescent microfillers for incrustations achievement by means of the indirect technique. Type inlay / onlay restorations, in which pulp vitality is preserved, where appropriate points of contact and suitable emergencies are created, cusp coverage with overlays, etc. are different cases, in which it is possible to use.

#### **Conclusions**

The use of a reinforced resin material provides appropriate intrinsic mechanical properties. There are many advantages of the indirect technique versus direct technique, such as the ideal characterization of the natural anatomy of the tooth, removing the risk of contraction of resin materials and conservative cavity preparation. Indirect use resins have improvements in both the matrix (polymerization and composition) and the material of filling (high proportion), which gives us greater wear resistance, increases resistance of tooth remaining, less microleakage so that currents of termoconduction that generate sensibility problems will not occur.

## - Oral Presentation 45

### **TITLE: Determining the concentration of hydrogen peroxide in bleaching products**

**AUTHORS: López Paniagua R, Gambini Buchón J, Llena Puy C, Forner Navarro L.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S21.**

\* doi:10.4317/jced.17643829

<http://dx.doi.org/10.4317/jced.17643829>

#### **Objectives**

Currently, hydrogen peroxide (HP) is used as active agent in tooth bleaching treatments. However, the HP

can be affected by some environmental conditions such as temperature, ultraviolet radiation or visible light, modifying the final concentration of this compound. The aim of our study is to assess a method for determine the concentration of HP in commercial bleaching preparations when this solutions are applied on the teeth.

### Material and Methods

We selected three commercial preparations: Opalescence Endo® (35%PH), Pola Office +® (37.5 %PH) and DayWhite® (37 %) carbamide peroxide, All of them were preserved at 4°C in darkness. In order to quantify the amount of HP , the different compounds were dissolved in 6% bidestilated water (weight / volume) and 1 ml of this solution was placed in a special quartz cuvette and introduced into a fluorometer. Subsequently, the light emitted by the fluorometer ( $\lambda=420$  nm) passed through the sample and the associated software provided the fluorescence emitted by the HP. Using this data and line pattern, the concentration of HP in the samples was obtained.

### Results

The concentration of HP was similar in the Endo Opalescence® and Pola Office +® samples, 26.09 M and 26.68 M, respectively. On the other hand, the concentration of HP in DayWhite® sample was 5.28 M.

### Conclusions

The method used in this study allows to calculate the concentration of HP (active agent) in the bleaching products analyzed. However, future studies should be developed in order to compare the final concentration with the desired product concentration.

## - Oral Presentation 46

**TITLE: The complexity of rehabilitation canine guides**

**AUTHORS: Luengo Capilla MA, Ceballos L, Gomes G, Fuentes MV, Araujo E.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S22.**

\* doi:10.4317/jced.17643830

<http://dx.doi.org/10.4317/jced.17643830>

### Introduction

The rehabilitation of canine guidance is a challenge for clinicians as it sometimes implies the conflict between different, opposing, materials which can result in asymmetrical wear. The constant introduction of new materials lacking sufficient, or sometimes any, clinical studies regarding their long-term behaviour is a reality.

Therefore the clinic faces a difficult task when choosing the most appropriate material.

### Case report

We present two clinical cases in which canine guidance was rehabilitated as a complementary treatment for aesthetic reasons at the patients' demand. For these treatments the restorative materials used were a lithium disilicate ceramic (IPS and maxPress, Ivoclar Vivadent) and a nano-ceramic resin composite (Lava Ultimate, 3M ESPE), respectively.

In the first case, four ceramic veneers were made for the maxillary incisors and two more for the mandibular incisors to protect the restoration of the upper teeth and provide stability to the guidance. Thus, the guidance was made of ceramic and enamel. At the 18 month revision a distinct wear of was observed in the natural enamel requiring additional restoration of the lost dental tissue by means of a ceramic veneer made of the same material.

In the second case, the patient had direct resin composite veneers applied in the maxillary canines and in the maxillary right lateral incisor, without occlusal contact, that were made at the end of the orthodontic treatment. Palatine veneers of composite resin were applied in the maxillary canines using the nano-ceramic composite resin (Lava Ultimate, 3M ESPE). At the 6 months check revision no wear was observed in the antagonist teeth.

### Conclusions

Despite the fact literature point out to a similar wear for lithium disilicate ceramic and enamel, further clinical studies are required to corroborate the evidence.

## - Oral Presentation 47

**TITLE: Stimulatory effect of leptin in the dentin sialophosphoprotein (DSPP) production in human dental pulp**

**AUTHORS: Martín González J, Sánchez Domínguez B, Crespo Gallardo I, Martín Jiménez M, Segura Egea JJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S22.**

\* doi:10.4317/jced.17643831

<http://dx.doi.org/10.4317/jced.17643831>

### Objectives

Leptin , a mediator of the inflammatory response , and its receptor ( LEPR ) are expressed in the human dental pulp . Sialophosphoprotein dentin ( DSPP ) is a protein involved in odontogenesis and the dentin-pulp reparative response . This research aims to describe the im-

munohistochemical localization of LEPR and study the effect of leptin on the expression of dentin sialophosphoprotein ( DSPP ) by human pulp cells .

### Materials and Methods

Twenty-five dental pulp samples were obtained from freshly caries- and restoration- free extracted human third molars. The pulp samples were processed and mineralization produced by odontoblasts in response to leptin was determined analyzing the expression of DSPP by immunoblot and by real time PCR ( qRT- PCR ). LEPR localization was examined by immunohistochemistry using anti-human LEPR monoclonal antibody.

### Results

The immunoreactivity for antibodies anti- LEPR was localized in the odontoblastic layer and the pre dentine . Leptin dose-dependently stimulated dentin sialophosphoprotein expression in human dental pulp. Western blot analysis of leptin-stimulated human dental pulp samples revealed the presence of a protein with an apparent molecular weight of approximately 100 kDa, which corresponds, to the estimated molecular weight of DSPP. The expression of DSPP mRNA was confirmed by qRT-PCR analysis, and the size of the amplified fragments was confirmed by agarose gel electrophoresis.

### Conclusions

For the first time it has been demonstrated that human odontoblasts express the leptin receptor ( LEPR ) , and the binding of leptin to LEPR results by DSPP production by odontoblasts . These findings suggest that leptin plays a role in the defensive response pulp and dentinogenesis

## - Oral Presentation 48

**TITLE: Activation of PKB Pathway signaling by leptin in human dental pulp**

**AUTHORS: Martín Jiménez M, Martín González J, Crespo Gallardo I, Sánchez Domínguez B, Segura Egea JJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S23.**

\* doi:10.4317/jced.17643832

<http://dx.doi.org/10.4317/jced.17643832>

### Objectives

Leptin, initially described as an adipocyte-derived hormone to regulate weight control, as well as its receptor (LEPR), are expressed in human dental pulp. Both leptin and LEPR are up-regulated during pulp experimental inflammation. This study aims to assess if leptin

signal transduction in human dental pulp involves PKB phosphorylation.

### Materials and Methods

Fifteen dental pulp samples were obtained from freshly caries- and restoration- free extracted human third molars. Pulp samples were processed and leptin signaling was determined analyzing PKB phosphorylation by immunoblot. To measure activation of PI3K pathway in human dental pulp in response to human leptin, the activation of the central kinase of this pathway, i.e. PKB, was measured using antibodies that specifically recognize the phosphorylated form of PKB (P-PKB). Anti- $\beta$ -tubulin antibodies were used for the control of the immunoblot.

### Results

Leptin stimulated PKB phosphorylation. The phosphorylated band corresponded with an apparent molecular mass of about 60 kDa, which corresponds, to the estimated molecular weight of P-PKB. An increase in phosphorylation was observed at 0.1 nM leptin, maintaining the effect at 1 and 10 nM leptin. The relative amount of PKB in stimulated pulps was significantly higher than in unstimulated pulps ( $p < 0.05$ ).

### Conclusions

PKB is involved in leptin signalling pathways in human dental pulp.

## - Oral Presentation 49

**TITLE: Root perforations in central incisors: 12 years of evolution**

**AUTHORS: Martínez Osorio J, Canalda Salhi C, Berástegui Jimeno E.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S23.**

\* doi:10.4317/jced.17643833

<http://dx.doi.org/10.4317/jced.17643833>

### Introduction

In the endodontics field, iatrogenesis is a common and very complex issue, we had the chance to perform a re-treatment in a patient with two root perforations performed while trying to access the pulp chamber of 1.1 and 1.2, due to lack of direction in the access opening.

### Case report

A 65 years-old patient was referred to our clinic to re-treat endodontically both central incisors after a previous failed attempt to in which the deviation of the axis to access cavity did a root perforation iatrogenically in

each of the teeth. Clinical photos and RX of the endodontic files introduced in the perforations and the correct location of the root canals are presented, as well as the root canal treatments performed in 2002.

The teeth perforations were exposed afterwards to perform a vestibular givectomy and were sealed with composite, after complete healing of the gingiva, the two teeth were treated with full coverage crowns. Images of the entire treatment were taken. Throughout these 12 years, we have been making regular checks, the patient never again had any pathology. The clinical and esthetic evolution as well as the evolution of the root canal treatment and the perforations were successful. We present photos of the progress of the case and of the current state.

### Conclusions

The orientation of the access cavity to pulp chamber and the anatomical knowledge of the tooth are very important to perform endodontic treatments. It must be taken into account the possible abnormalities in the size and shape of the tooth, the position in the arch, possible destruction by caries, abrasions or scuffs when we start to opening the chamber access. The evolution of the case shows that Conservative Dentistry should always be the first treatment option.

## - Oral Presentation 50

### TITLE: Fluorescence of resin composites: Comparison between shade types of various brands

**AUTHORS:** Meller C, Connert T, Klein C.

**SOURCE:** *J Clin Exp Dent.* 2014 1;6 (Supplement1):S24.

\* doi:10.4317/jced.17643834

<http://dx.doi.org/10.4317/jced.17643834>

### Objectives

The aim of this study was to determine the fluorescence properties of different commercially available resin composite shades.

### Materials and Methods

A total of 234 different colors (122 enamel, 80 dentin, and 32 special shades) of 16 different brands (Miris<sup>®</sup>2: Coltène-Whaledent, Esthet-X<sup>®</sup>HD, Ceram-X<sup>®</sup>Duo, Spectrum<sup>®</sup>: Dentsply-DeTrey, EcuSphere<sup>®</sup>: DMG, ENAMEL-Plus HFO/HRi<sup>®</sup>: GDF, Venus<sup>®</sup>, Venus<sup>®</sup> Diamond, Charisma<sup>®</sup>: Heraeus-Kulzer, Tetric-EvoCeram<sup>®</sup>, IPS-Empress<sup>®</sup> Direct: Ivoclar-Vivadent, Filtek-TM SupremeXT, FiltekTMZ250: 3M-Espe, Amaris<sup>®</sup> and Grandio<sup>®</sup>: VOCO) were analyzed. The composites were light-cured for 40s with a polymerization lamp

(Bluephase<sup>®</sup>, Ivoclar-Vivadent) in 96-well assay microplates (Corning<sup>®</sup>) and fluorescence measurements conducted at 37°C using the monochromator-based fluorescence microplate reader Synergy<sup>TM</sup> Mx (BioTek<sup>®</sup>). The maximum fluorescence and the corresponding excitation and emission wavelength were evaluated for each shade.

### Results

Maximum fluorescence was achieved at a nearly comparable combination of excitation and emission wavelength between shades, but with strongly varying intensities. Only two brands, Filtek<sup>TM</sup>Supreme XT (dentin shades: 1585±507 RFU, enamel shades: 4473±330 RFU) and Filtek<sup>TM</sup>Z250, (enamel shades: 867±279 RFU) resembled the fluorescence of natural human enamel and dentin probes. The shades of the other brands showed as much as three to fifteen times higher mean maximum fluorescence (dentin shades: 10331-47774 RFU; enamel shades: 19283-38264 RFU; special shades: 35934-60001 RFU). No relevant differences were recognized at the mean excitation (395-400 nm) and emission (450-458 nm) wave length for the assessed groups.

### Conclusions

The results demonstrate that the analyzed composite brand shade types reached their maximum fluorescence at nearly the same excitation emission wavelengths combination, but with varying optical fluorescence intensities. The results provide fluorescence data of a vast sample of different well-known composite shades, data needed not only for the development of new aesthetic materials, but also for diagnostic reasons in routine (re- treatment, forensic and epidemiological research/ analyses).

## - Oral Presentation 51

### TITLE: Comparative study of the fatigue resistance of different rotary systems

**AUTHORS:** Mena Álvarez J, Zubizarreta Macho A, Rico Romano C.

**SOURCE:** *J Clin Exp Dent.* 2014 1;6 (Supplement1):S24.

\* doi:10.4317/jced.17643835

<http://dx.doi.org/10.4317/jced.17643835>

### Objectives

The aim of this study is to compare the fatigue resistance of different rotary systems with different transverse section contributing files of taper and similar diameter apical, emphasizing Hyflex and F360 as new systems of rotary instrumentation.

## Materials and Methods

For this study there have been selected 72 rotary nickel-titanium (NiTi) instruments

11 groups were realized: Group A Mtwo System 25/06 (VDW, Munich, Germany) Group B K3 System 25/06 (SybronEndo, Orange, CA) Group C TF System 25/06 (SybronEndo, Orange, CA) Group D Protaper Universal System F2 (Dentsply, Maillefer, Switzerland) Group E GT series X System 30/06 (Dentsply, Maillefer, Switzerland) Group F GT series System X20/06 (Dentsply, Maillefer, Switzerland) Group G Profile System 25/06 (Dentsply, Maillefer, Switzerland) Group H HyflexCM System 20/04 (Coltene, Alstatten, Switzerland) Group I HyflexCM System 25/04 (Coltene, Alstatten, Switzerland) Group J HyflexCM System 20/06 (Coltene, Alstatten, Switzerland), Group K F360 System 25/04 (Komet Dental, Brasseler GmbH & Co. Lemgo, Germany), Group L F360 System 35/04 (Komet Dental, Brasseler GmbH & Co. Lemgo, Germany).

The cyclic fatigue test was performed in a customized artificial stainless steel canal (60° degree curvature with 5 mm radius). Instruments were rotated at 300 rpm until fracture. All data obtained were recorded and statistically analyzed using an ANOVA test.

## Results

Profile 25/06 were found to be the most flexible instruments, showing a significant difference ( $P < .05$ ) in comparison with the other instruments. Followed by the limes Hyflex and F360 in descending order (20/04, 25/04, 20/06, 35/04). Protaper F2 was the system that showed a minor resistance to the cyclical fatigue.

## Conclusions

The systems with a major area of section are more vulnerable to the fracture that those of minor section turning in the same curvature. Of the current systems Hyflex and F360 are those who obtain better results without significant differences among their different tapers.

## - Oral Presentation 52

**TITLE: Problems in anterior maxillary teeth**

**AUTHORS: Miraglia Cantarini J, Escribano Mediavilla N.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S25.**

\* doi:10.4317/jced.17643836

<http://dx.doi.org/10.4317/jced.17643836>

## Introduction

Endodontic procedures consists in clean, shape and fill in three dimensions, with definitely materials, the root canal system.

## Case report

A referred patient with acute symptoms in subnasal region attended the dental office. Diagnostic and radiographic tests were done in the upper anterior teeth. The diagnosis was Chronic Apical Periodontitis with a flare up process caused by inadequate root canal treatments in teeth 1.1, 1.2, 2.1 and 2.2. Retreatment of all previous root canal procedures was the treatment option: 1.2 and 2.2 were orthograde retreatments, 1.1 apical foramen resorption was sealed with MTA and 2.1, once the broken hedstroem file was removed from the root canal, apical third and the lateral root perforation were sealed with MTA.

## Conclusions

After 2 years follow up 2 years, periapical health is evidente and no symptoms are presented.

## - Oral Presentation 53

**TITLE: Effect of adhesive vibration with Compothixo® in shear bond strength**

**AUTHORS: Miralles Alvarez AF, Duran Jimenez B, Guillen Sanchez J, Chiva Garcia F.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S25.**

\* doi:10.4317/jced.17643837

<http://dx.doi.org/10.4317/jced.17643837>

## Objectives

To compare the effect of the adhesive vibration with Compothixo® on the shear bond strength of composite resin to dentin with the manual application of the adhesive system.

## Materials and Methods

12 molars extracted for periodontal reasons were used. Flat dentin mesial surface were made by diamond bur to expose the dentin. Teeth were randomly divided into two groups (n=6 each): (Group1) adhesive without vibration, rubbing with a microbrush (15 seconds), (2) Adhesive vibrated with Compothixo® (15 seconds). After etching the dentin surface (37 % orthophosphoric acid), OptiBond® Solo Plus™ adhesive was placed according to the manufacturer's instructions. Composite cylinders( 2mm high, 4 mm internal diameter) (Herculite XRV Ultra A3®) were polymerized 20 seconds with Demetron Kerr® curing light and were stored in distilled water at 37 ° during 24 hours. Shear bond strength was performed using an universal testing machine Autograph AGS (Shimadzu) at a crosshead speed of 1mm/min. Data were statistically analyzed using t-test (significance level:  $p < 0.05$ ) with SPSS v15.

## Results

Shear bond strength of group 1 ( $38,08 \pm 30,53$  Mpa) was higher than group 2 ( $19,5 \pm 11,41$  Mpa) but the differences weren't significantly different ( $p=0,21$ ).

## Conclusions

Adhesive application with Compothixo® did not improve the bond strength of composite to dentin.

## - Oral Presentation 54

**TITLE: Influence of cement and polymerization technique in post luting**

**AUTHORS: Montalvo Sánchez N, García Barbero AE, Vera González V, Aliaga Vera I.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S26.**

\* doi:10.4317/jced.17643838

<http://dx.doi.org/10.4317/jced.17643838>

## Objectives

To evaluate the influence of cement type and polymerization technique on the push-out bond strength and microleakage of fiber posts.

## Materials and Methods

32 human premolars were sectioned at the proximal cemento-enamel junction and endodontically treated employing Protaper rotary instruments. The root canals were obturated with gutta-percha cones using the lateral condensation technique and AH Plus sealer. Post space was prepared to a depth of 9 mm. Samples were divided into 4 groups according to the cement and the polymerization technique used: conventional dual resin cement, self-adhesive dual resin cement, immediate photocuring, and delayed photocuring. Each root were cut into 3 slices perpendicular to the long axis of the tooth. 20 specimens were subjected to micropush-out test and the remaining 12 were prepared to evaluate the microleakage. Complementarily, the samples subjected to microleakage test were observed by scanning electron microscope.

## Results

Posts luted with self-adhesive resin cement produced lower bond strength and greater microleakage than those cemented with self etching adhesive and conventional resin cement. The polymerization techniques tested showed no differences in bond strength and microleakage. Root level affected the bond strength, with the lowest values for the apical third, but did not affect microleakage.

## Conclusions

Self etching adhesive followed by conventional resin cement produced higher bond strength and lower microleakage than self-adhesive resin cement. Polymerization technique seems not to affect the variables studied.

## - Oral Presentation 55

**TITLE: An in-vitro microleakage study: A new "multimode" self-etch adhesive with enamel etching**

**AUTHORS: Moreno Aroca M, Alegre Domingo T, Faus Matoses V, Faus Llácer VJ.**  
**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S26.**

\* doi:10.4317/jced.17643839

<http://dx.doi.org/10.4317/jced.17643839>

## Objectives

The aim of this study was to evaluate the microleakage produced by a new all-in-one multimode self-etch adhesive on enamel and cementum by using a selective enamel etching.

## Materials and Methods

A hundred and forty class V cavities were prepared with the occlusal margin in enamel and the gingival margin in dentin and restored with two different adhesives. The specimens were divided into two groups: Group 1) using Prime&Bond NT (Dentsply De Trey) with total etch technique; group 2) using Scotchbond Universal (3M ESPE) with selective enamel etching. After thermocycling process, the teeth were immersed in Indian ink during a period of 24 hours and cut longitudinally. Microleakage was evaluated in coronal and apical walls by optical microscope at 2,5x magnification. Data were statistically analyzed with the Chi-squared test ( $p<0.05$ ).

## Results

Enamel and cementum microleakage with Scotchbond Universal was higher than using Prime&Bond NT. At the enamel margin both adhesives showed less microleakage than in cement margin. The highest microleakage expression was found on cement when Scotchbond Universal was used.

## Conclusions

Prime&Bond NT offers less microleakage level than Scotchbond Universal when used with selective enamel etching. More in-vitro microleakage studies are necessary.

## **- Oral Presentation 56**

**TITLE: Micro-invasive treatment of orthodontic white-spot lesions**

**AUTHORS: Peixoto A, Carmo J, Sanches C, Manso AG.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S27.**

\* doi:10.4317/jced.17643840

<http://dx.doi.org/10.4317/jced.17643840>

### **Introduction**

Icon® is a resin infiltrant used for micro-invasive treatment of smooth surface and proximal caries lesions. It's used to treat lesions up to first third of dentin (D1). Resin infiltration aims to penetrate lesion using low viscosity resin with high penetration properties, in a single visit, with no drilling. The system consists in Icon-Etch (Hydrochloric acid, pyrogenic silicic acid, surface-active substances), Icon-Dry (99% ethanol), Icon-Infiltrant (Methacrylate-based resin matrix, initiators, additives), Approximal-Tips, Luer-Lock-Tip and dental wedges. The purpose of these cases is to demonstrate the use of this technique in orthodontic white-spots.

### **Case report**

Two female patients were selected from CESEM's University Clinic, Caparica-Portugal. Both presented white-spot lesions due to orthodontic appliance. Case 1- 13 years old, orthodontic removal appointment 14 days before Icon treatment, tooth chosen 11. Case 2- 21 years old, orthodontic removal appointment 7 years ago, tooth chosen 44. The teeth were cleaned, rubber dam placed and Resin infiltrant applied according to manufacturer's instructions. The patient was instructed to floss and brush with fluoridated toothpaste. The lesions were photographed before, immediately after the resin infiltrant application and 2 weeks later. White-spot lesions were filled with resin infiltrant and looked similar to sound enamel, immediately. Porous enamel has lower refraction than sound enamel, but when infiltrated, refraction increases, improving, dramatically, the aesthetic. Other studies refer that infiltration combined with remineralization shows better results.

### **Conclusions**

Clinical management of white spots, with restorations, fluor therapy, microabrasion, is challenging and aesthetic outcome is not always predictable, however in these cases we demonstrated successful use of Icon® for masking orthodontic white-spots. The infiltrant is simple and conservative. Further research is needed to evaluate long-term stability, efficacy and microscopic changes.

## **- Oral Presentation 57**

**TITLE: Multidisciplinary treatment of endo-periodontal lesions**

**AUTHORS: Peña Alcázar M, Zubizarreta Macho A, Rico Romano C, Sierra Armas L.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S27.**

\* doi:10.4317/jced.17643841

<http://dx.doi.org/10.4317/jced.17643841>

### **Introduction**

The tooth and supporting tissues should not be considered as separate entities but as a biological unit, the result of the close relationship between the two. These structures have many roads that allow two-way exchange of nutrients and harmful substances. This anatomical link explains the simultaneous presence of periodontal and endodontic conditions of nature. Endo-periodontal lesions are described as inflammatory nature of those injuries that simultaneously affect the dental pulp tissue and tooth support. The therapeutic objective of the combined lesions lies in the etiological treatment of these pathological processes.

### **Case report**

The case of a 53-year-old referred to the Master in Clinical Endodontics and Microsurgery Periapical University of Alfonso X El Sabio, presenting grade II mobility on tooth 3.4 is described. The results of the clinical and radiological evidence showed concurrent endo-periodontal lesion in tooth 3.4. Canal treatment of the affected tooth followed by periodontal debridement surgery that allowed the crowded bacterial deposits on the root surface was performed. The multidisciplinary treatment of this tooth was decisive for the survival of the affected tooth and allow tissue repair of the affected tissues.

### **Conclusions**

Endo-periodontal lesions are a challenge for the clinician. It should be emphasized the importance of a correct diagnosis, and the prognosis of these lesions depends on immediate treatment plan.

## **- Oral Presentation 58**

**TITLE: Influence of clinical usage of ProTaper S1 instrument in cyclic fatigue resistance**

**AUTHORS: Pérez-Higueras JJ, Arias A, de la Macorra JC.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S27.**

\* doi:10.4317/jced.17643842

<http://dx.doi.org/10.4317/jced.17643842>

## Objectives

To compare the influence of the amount of in vivo shaped root canals (RC) in static cyclic fatigue (CF) resistance in ProTaper Universal (PTU) S1 instruments at different points of curvature.

## Materials and Methods

A total of 80 files PTU S1 were divided in four groups of 20 instruments each: control group 0 (unused files), group 1 (files used to shape up to 10 RC), group 2 (files used in 11-15 RC) and group 3 (files used in more than 15 RC). The same endodontist with more than 15 years of experience in rotary canal instrumentation shaped all RC using always the same protocol (PTU S1 was used to working length after the achievement of a reproducible glide path with a #15 hand file. 5,25% NaOCl solution was used for irrigation). CF resistance was tested in stainless-steel curved canals (60°, r=3mm). All instruments were rotated at 300rpm until fracture at 5mm and at 10 mm from the tip, making a total of 8 subgroups (0-5, 0-10, 1-5, 1-10, 2-5, 2-10, 3-5, 3-10). Time to fracture was recorded. Mean half-life, Beta and Eta were calculated for each group and were compared with Weibull analysis.

## Results

PTU S1 instruments will last significantly longer at 5 than at 10 mm with a 100% probability independently of the number of shaped RC, however there were not significant differences in CF resistance among the four groups (unused instruments or files used to shape different number of RC), neither at 5 nor at 10 mm.

## Conclusions

PTU S1 was significantly more resistant at 5 than at 10 mm from the tip. The increase in the number of RC shaped with the same instrument did not decrease CF resistance of the instrument.

## - Oral Presentation 59

**TITLE: In vitro comparison of the antimicrobial effect of Tri-antibiotic paste components, amoxicillin and clavulanic acid against Fusobacterium nucleatum and Actinomyces naeslundii**

**AUTHORS: Prieto González L, González Nieto A, Martínez Pinar A, Basel Sawas Jiménez M, Rubio Flores D, García Barbero E.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S28.**

\* doi:10.4317/jced.17643843

<http://dx.doi.org/10.4317/jced.17643843>

## Objectives

To compare the effectiveness of Tri-antibiotic Paste components (Minocycline / metronidazole / ciprofloxacin), amoxicillin and clavulanic acid against two endodontic pathogens, Fusobacterium nucleatum and Actinomyces naeslundii.

## Materials and Methods

It was determined the minimum inhibitory concentration (MIC) of minocycline, metronidazole, ciprofloxacin, amoxicillin and clavulanic acid by microdilution assay in 96-well Mueller- Hinton agar plates according to EUCAST. We seeded 50 µl of standard bacterial suspension (corresponding to 0.5 of the McFarland scale), with 50 µl of antibiotic solution in a concentration gradient. Under spectrophotometry, we calculated the optical density (OD 600) to determine the lowest concentration (µg / ml) that inhibit the visible growth of the microorganisms after overnight incubation (MIC). Statistical analysis was carried out by one way ANOVA and post- hoc Duncan test at a level of significance of p<0,05.

## Results

For Fusobacterium Nucleatum, no significant differences were found for amoxicillin, metronidazole and minocycline. Nevertheless, ciprofloxacin resulted in higher MIC value than the others, indicating its lower antibacterial activity.

For Actinomyces naeslundii colonies, no differences were found between amoxicillin and minocycline. Ciprofloxacin and metronidazole showed higher MIC values in a significant manner.

for both bacteria, the values obtained from the clavulanic acid can be translated in terms of bacterial resistance.

## Conclusions

No significant differences were found for inhibiting bacterial colonies with amoxicillin or Tri-antibiotic paste components, needing higher concentrations to inhibit the growth of ciprofloxacin with Fusobacterium nucleatum, and metronidazole and ciprofloxacin with Actinomyces naeslundii.

By itself, clavulanic acid is not able to inhibit the growth of both bacteria studied.

In view of the results of this study, it seems appropriate to analyse the effectiveness of Tri-antibiotic paste components combined with amoxicillin and the combination of amoxicillin with clavulanic acid.

## - Oral Presentation 60

**TITLE: Digital smile design: a useful tool for a predictable and conservative treatment**

**AUTHORS: Reyes Rivas Z, Faus Matoses V, Faus Matoses I, Alegre Domingo T, Faus Llácer VJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S29.**

\* doi:10.4317/jced.17643844

<http://dx.doi.org/10.4317/jced.17643844>

### Introduction

Computer design software have become one of the main tools between the interdisciplinary team and between the dentist and patient, being useful in the design and planning of cases.

Following established aesthetic parameters and incorporating technology, the clinician can plan predictably smile design cases and communicate the expected results to the patient and prosthetist.

### Case report

45 year-old woman, attended to the dental clinic unsatisfied with the color of her teeth wishing to enhance her smile. During the clinical examination inverted smile and giroversion of 2.2 was observed.

Analysis of the case with Digital Smile Design program was made which helped to make a diagnostic wax up. The vertical dimension was increased by placing occlusal composites on 4.5, 4.6, 4.7, 3.5, 3.6, 3.7 (Spectrum TPH3, DeTrey Dentsply Konstanz, Germany). A preparation for feldspathic veneers was performed, from 1.5 to 2.5 and from 4.5 to 3.5 using a mock up. Veneers were fabricated using CAD / CAM and pressed ceramic feldspathic (Noritake, Japan) and bonded with adhesive Prime Bond NT (Dentsply DeTrey Konstanz, Germany) and light-cured resin cement (Calibra, Dentsply DeTrey Konstanz, Germany).

### Conclusions

The knowledge of aesthetic parameters and the use of a Digital Smile Design program, allowed the planification of predictable and conservative dental restorations, achieving the aesthetic and functional needs of the patient.

## - Oral Presentation 61

**TITLE: Variations in the internal anatomy of mandibular first premolar by using CBCT**

**AUTHORS: Riádigos Presas J, Domínguez Pérez A, Castelo Baz P, Varela Patiño P, Martín Biedma B.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S29.**

\* doi:10.4317/jced.17643845

<http://dx.doi.org/10.4317/jced.17643845>

### Objectives

Endodontics studies the prevention and treatment of pulp disease and apical periodontitis. The key lies in cleaning and sealing all canals system so it is essential to know its anatomy. Our goal is to review the anatomy of mandibular first premolars trying to reduce the high rate of relapses and failures.

### Materials and Methods

We collect images from Cone -Beam Computed Tomography (CBCT ) with the aim of studying the anatomy of mandibular first premolars in a population of Galicia, Spain , between May 2010 and May 2013. Images were taken with Planmeca Romexis system (Asentajankatu, Helsinki, Finlandia) with the following parameters: 120 kV, 20.27 mA, exposure time between 8.9 and 14.7 seconds and voxel size from 0.25 to 0.30 mm.

We analyze 162 mandibular first premolars of 97 different patients attending the Faculty of Dentistry, University of Santiago de Compostela requesting implant treatment, orthodontics or endodontics. . We analyze the number and configuration of the roots, the number of canals by root and configuration of the canals by Vertucci's classification. An informed consent is given to all patients to be signed to join the study and inclusion criteria of the sample set.

### Results

The percentages by classification are as follows : Type I: 67.9 % , Type II : 1.23 % , Type III : 5.55 % ; Type V : 21.6 % , Type VI: 3.09% and Type VII: 0.62 %.

### Conclusions

The highest percentage of premolars are Type I, followed by type V. Type IV and Type VIII showed no prevalence in the sample.

## - Oral Presentation 62

**TITLE: In vitro study of flexure strength of flowable composite resins**

**AUTHORS: Rico Carrillo V, Martínez Huesca M, Baguena Gómez JC, Chiva García F.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S30.**

\* doi:10.4317/jced.17643846

<http://dx.doi.org/10.4317/jced.17643846>

### Objectives

To compare the flexure strength of six flowable composite resins

### Materials and Methods

30 Rectangular bar-shaped specimens (20mm x 7mm x 1mm thickness) of six flowable composite resins (X-tra base, Voco; SDR, Dentsply; X-flow, Dentsply; Opticor Flow, Spofa Dental; Filtek Supreme XTE, 3MEspe y Grandio Flow, Voco) were made with a metal mold (n=5 each). Composite resins were photopolymerized with Demetron LC curing light (Kerr) according to manufacturer's instructions and stored in distilled water 24 hours at 37°C. Specimens were tested in three-point flexure in an universal testing machine (Autograph AGS- 1KND, Shimadzu, Japan) at a crosshead of 1mm/min. One-way analysis of variance and Tukey's post-hoc test were made (significance level:  $p < 0,05$ ) using SPSS v.15

### Results

Three-point flexure strength (MPa) was 157,2935,02 (Grandio flow), 138,2438,47 (FiltekXTE,3Mespe), 112,9916,39 (Opticorflow,Spofa), 11066,4 (X-tra base,Voco), 101,0148,7(SDR,Dentsply) y 42,379,46 (X-flow,Dentsply), showing significant statistical differences between Xflow (lower strength) versus Grandio flow ( $p=0,002$ ) and Filtek Supreme XTE ( $p=0,011$ ).

### Conclusions

Flowable composite resins Grandio Flow and Filtek Supreme XTE showed the highest flexure strength and X-flow was the lowest.

## - Oral Presentation 63

**TITLE: Treatment of type II dens invaginatus by guided endodontics**

**AUTHORS: Rico-Romano C, Zubizarreta-Macho A, Soto-Pereira E, Sierra-Armas L, Alonso-Ezpeleta LO, Mena-Álvarez J.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S30.**

\* doi:10.4317/jced.17643847

<http://dx.doi.org/10.4317/jced.17643847>

### Introduction

Dens invaginatus is a rare dental malformation probably resulting from an infolding of the dental papilla during tooth development, whose treatment is a challenge for the clinician. Numerous therapeutic alternatives have been proposed for the treatment of this anatomical alteration: nonsurgical root canal treatment, endodontic surgery, intentional replantation, extraction, and combinations of the previous one. This range of possibilities is the result of ignorance of the internal anatomy of dens invaginatus. Structural variations make very difficult the conventional root treatment, condemning these teeth to submit new therapeutic procedures.

### Case report

This case report shows the root canal treatment of a type II dens invaginatus diagnosed by cone beam computed tomography. The pulp access was planned using a planning software osseointegrated implants and was guided by splints made by stereolithography.

### Conclusions

Cone beam computed tomography is the most effective diagnostic method of teeth with anatomical malformations. The planning software osseointegrated implants are an effective method for planning the root canal treatment, and the confection of stereolithographic splints allows a guided and conservative pulp access.

## - Oral Presentation 64

**TITLE: Cervical root resorption: Report on two clinical cases**

**AUTHORS: Robles Gijón V, Lucena Martín C, Pulgar Encinas RM, Navajas JM.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S30.**

\* doi:10.4317/jced.17643848

<http://dx.doi.org/10.4317/jced.17643848>

## Introduction

Cervical root resorption (CRR) is an aggressive form of external resorption which begins in the cervical region of the root surface, underneath the epithelial insertion. Clinically, it is a challenge to the dentist, as the symptoms appear late.

## Case report

CASE 1: This case presented A 29- year-old male who complained of acute nocturnal pain at the right maxillary central incisor level. His medical history was not contributory with the exception of an episode of renal colic. Intraoral examination revealed a small lesion at the cervical-distal angle of I.1, and a change in underlying coloration to a pinkish tone. Periapical radiography revealed a rounded radiolucid cervical lesion restricted to the cemento-enamel junction level. Therefore the CRR was diagnosed as Heithersay Class 2. In this case a conservative treatment that included endodontic treatment, realization of periosteal flap surgery and restoration with resin composite was performed. CASE 2: A 22-year-old woman complained of pain at the right maxillary central incisor level. The patient's medical history only indicated a nephrolithiasis episode. In the intraoral inspection of I.1, a well-defined small lesion was found at cervical area of the palatal surface. The underlying area of the lesion showed pink coloration. Periapical radiography detected an irregular radiolucid lesion that extended from the cemento-enamel junction towards the middle third of the root. To confirm the true extent of the lesion, we used cone-beam computerized tomography (CBCT), which showed severe root resorption corresponding with a Heithersay class 4. In view of the extensive nature of the lesion, the treatment option selected included tooth extraction and placement of an immediate implant with a temporary crown.

## Conclusions

As the therapeutics options for CRR can range from relatively simple direct restoration techniques from to complex multidisciplinary approaches, an accurate diagnosis is essential to devise an appropriate treatment plan. In this sense, CBCT constitutes an useful tool.

## - Oral Presentation 65

**TITLE: Influence of finishing procedures on color and translucency of composite resins**

**AUTHORS: Roldán C, Robles V, Espinar C, Pérez MM, Lucena C.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S31.**

\* doi:10.4317/jced.17643849

<http://dx.doi.org/10.4317/jced.17643849>

## Objectives

To evaluate the finishing procedures effect on color and translucency of three composites: micro-hybrid, nanofill and microfilled.

## Materials and Methods

Cylindrical specimens of microhybrid, nanofiller (1cm in diameter, 1mm thick) and microfilled (1cm in diameter, 0.5 mm thick) resin composite A3 Renamel (Cosmedent, Chicago, USA) were fabricated. The composite was placed in a micrometer mold (Smile Line, Switzerland) in bulk, pressed with a glass slide and then light-cured through the glass slide with Style Bluephase unit (Ivoclar, Vivodent; 1100 mW/cm<sup>2</sup>) for 15 seconds.

The surface appearance was assessed under magnification and the sample thickness at three points was checked with a caliper before, and after finishing procedures. For each type of composite 6 samples were obtained, which were randomly assigned to two subgroups (n=3). The specimens of subgroup 1 were finished with aluminum oxide discs (Flexidisc, Cosmedent, Chicago, USA), while in subgroup 2, the resin composite surface was texturized with a diamond bur Periocare (831-524, Dentacare). All samples were polished with diamond (3 and 1 micron) and aluminum oxide pastes.

The spectral radiance of each sample was measured with a spectroradiometer (PR-704 Spectra-Scan, Photo Research Inc., Chatsworth, CA, USA) on white, black and gray standard backgrounds. Measurements were made at basal conditions, and after finishing and polishing steps. Finally, color differences and changes in the translucency parameter were calculated from these measurements.

## Results

Color difference ( $\Delta E_{ab}^*$ ) ranged from 0.04 to 2.15 CIE-Lab\* units for the microhybrid composite polished with discs and for the nanofill composite finished with diamond bur, respectively.

## Conclusions

Composite surface texturization with diamond bur induces perceptible color changes although within the clinical acceptable limits. The above changes are mainly linked to an increase in lightness. Changes in translucency parameter were imperceptible for all composites.

## - Oral Presentation 66

**TITLE: Antimicrobial activity of alexidine, chlorhexidine and cetrime against Streptococcus mutans biofilm**

**AUTHORS: Ruiz-Linares M, Baca P, Arias-Moliz MT, Aguado B, Ferrer-Luque CM.**

**SOURCE: J Clin Exp Dent. 2014 1;6  
(Supplement1):S31.**

\* doi:10.4317/jced.17643850

<http://dx.doi.org/10.4317/jced.17643850>

### **Objectives**

The use of antimicrobial solutions has been recommended to disinfect demineralized dentin prior to placing the filling material. The aim of this study was to evaluate the ability of several antimicrobials in controlling *Streptococcus mutans* biofilm formed in dentin.

### **Materials and Methods**

Antimicrobial activity of 1% and 2% alexidine, 0.2% and 2% chlorhexidine, 0.2% cetrimide and 0.2%, 0.5%, was assayed on 1-week *S. mutans* biofilm formed on standardized coronal dentin blocks. Results of *S. mutans* biofilm antimicrobial activity by different protocols were, respectively, expressed as the kill percentage of biofilm and the term "eradication" was used to denote the kill of 100% of the bacterial population. To compare the efficacies of the different protocols the Student t test was used, previously subjecting data to the Anscombe transformation.

### **Results**

All alexidine concentrations tested and 0.2% cetrimide achieved a kill percentage higher than 99%, followed by 2% chlorhexidine with percentages above 96% (no statistically significant difference among them). Whereas 2% alexidine and 0.2% cetrimide respectively showed eradication in 10 and 9 of the twelve specimens, 0.2% chlorhexidine did not produce eradication in any case.

### **Conclusions**

The present study shows that, when used for one minute, 2% and 1% alexidine, and 0.2% cetrimide, achieve eradication of *Streptococcus mutans* biofilm in most specimens when applied to a dentin-volumetric model.

## **- Oral Presentation 67**

**TITLE: Minimally invasive aesthetics through interdisciplinary orthodontic-restorative treatment**

**AUTHORS: Ruiz-Sánchez C, Faus-Matoses V, Faus-Matoses I, Alegre-Domingo T, Faus-Llácer VJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6  
(Supplement1):S32.**

\* doi:10.4317/jced.17643851

<http://dx.doi.org/10.4317/jced.17643851>

### **Introduction**

One of the greatest challenges which the professional faces is to fulfill the aesthetic expectations of the patient for the restoration of anterior teeth. Patients increasingly demand more aesthetics without excessive teeth preparation.

An interdisciplinary management should be planned in order to satisfy the aesthetic and the conservative needs of the patient.

### **Case report**

A 50-year-old woman came to the office asking for an improvement of the aesthetics of the maxillary incisors. Clinical examination showed the discoloration of the maxillary anterior teeth was observed due to a calcification caused by an occlusal trauma, along with attrition and compensatory extrusion.

The treatment plan consisted of the intrusion of the maxillary central incisors to bring gingival zenith to their original location and the alignment of the mandibular incisors with orthodontic treatment to prevent further occlusal trauma.

Once the orthodontic treatment was finished, coreless feldspathic veneers (Noritake, Japan) were placed in 1.1 and 2.1 with a minimally invasive preparation.

After diagnostic wax-up, a mock-up made of Integrity resin (DeTrey Dentsply, Konstanz, Germany) was performed. The impression was taken with Aquasil Hard Putty and Aquasil Ultra XLV (DeTrey Dentsply, Konstanz, Germany).

In a subsequent appointment, try-in and placement were performed under complete isolation. Adhesive Prime & Bond NT (Dentsply DeTrey, Konstanz, Germany) and translucent cement Calibra (Dentsply DeTrey, Konstanz, Germany) were used for bonding.

### **Conclusions**

The combined orthodontic-restorative treatment allowed the resolution of the aesthetic and functional problems of the patient with a minimally invasive approach that preserved all the healthy dental tissue.

## **- Oral Presentation 68**

**TITLE: MAPK is involved in leptin signalling pathways in human dental pulp**

**AUTHORS: Sánchez Domínguez B, Martín González J, Martín Jiménez M, Crespo Gallardo I, Segura Egea JJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6  
(Supplement1):S32.**

\* doi:10.4317/jced.17643852

<http://dx.doi.org/10.4317/jced.17643852>

### **Objectives**

Leptin is the peripheral signal produced by the adipocyte to regulate energy metabolism. It has been demonstrated that leptin receptor (LEPR) is expressed by human dental pulp cells, being up-regulated in experimental pulpitis. This study aims to assess if leptin signal transduction in human dental pulp involves MAPK phosphorylation.

### **Materials and Methods**

Fifteen dental pulp samples were obtained from freshly caries- and restoration- free extracted human third molars. Pulp samples were processed, and leptin signalling was determined analyzing MAPK phosphorylation by immunoblot.

### **Results**

Leptin stimulated tyrosine/threonine phosphorylation of MAPK by studying phosphorylation of MAPK 1/3. This signalling pathway was confirmed in all human dental pulps. Western blot analysis of leptin-stimulated human dental pulp samples revealed the presence of a protein with an apparent molecular weight of approximately 42-44 kDa, which corresponds, respectively to the estimated molecular weight of tyrosine phosphorylated forms of MAPK.

### **Conclusions**

MAPK is involved in leptin signalling pathways in human dental pulp. The present study is the first to demonstrate the leptin activity in human dental pulp tissues through MAPK signalling pathway.

## **- Oral Presentation 69**

**TITLE: Lava Ultimate CAD/CAM Restorations: How to increase its final esthetic integration?**

**AUTHORS: Sansalvador Millet V, Chávez Gatty M, Molina Garcia K.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S33.**

\* doi:10.4317/jced.17643853

<http://dx.doi.org/10.4317/jced.17643853>

### **Introduction**

The use of adhesive indirect restorations is increasingly being popularized to restore medium and big sized cavities and to limit the disadvantages related to direct techniques with composite. Adhesive indirect restorations are becoming more popular to restore medium and large cavities, as well as to limit the disadvantages related to direct composite techniques in restorations. The introduction to new technologies such as the development of

CAD/CAM, illustrates how this new approach to new restorative odontology may look in the future. However, at present, CAD/CAM systems have their limitations.

The process to obtain ceramic blocks or—more recently—resin blocks leads to a simplified anatomy restoration. This means we will be taking another posterior cosmetic treatment to achieve a more esthetic final restoration.

### **Case report**

We intend to present a clinical case, which describes step by step the personalized process by stratification of external laps of composite in a monolithic Lava ultimate restoration.

### **Conclusions**

We hope to illustrate how this technique could also be used to personalize, correct or to repair any other type of indirect restoration.

## **- Oral Presentation 70**

**TITLE: Biodentine: a new material in Endodontics and Conservative Dentistry; a literature review**

**AUTHORS: Santos Cubero J, García Marcos JI, Mena Álvarez J.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S33.**

\* doi:10.4317/jced.17643854

<http://dx.doi.org/10.4317/jced.17643854>

### **Introduction**

Biodentine is a recently introduced to the market in order to replace a new dentin material. It competes with other cements formed by calcium silicate like a calcium hydroxide, Mta, Irm, Cvi.

### **Description**

Biodentine comprises: tricalcium silicate, main component and regulator setting reaction, calcium carbonate, filler acting, dioxide zirconium, providing radiopacity to the material to watch on a radiograph, calcium chloride, accelerates the setting and a polycarboxylate that reduces the viscosity of the cement.

### **Discussion**

Numerous scientific studies endorse it in conservative dentistry (posterior and anterior restorations sealing post, post endodontic reconstructions, direct pulp capping), endodontic and pediatric dentistry field (Perforations, apical caps, retrograde fillings) corroborating excellent mechanical properties, biocompatibility, formation of dentin bridges, good sealing and easy operation.

### **Conclusions**

Biodentine is a biocompatible material, creates dentinal bridges, and presents an efficient adhesion and sealing. It has superior mechanical properties than those of other silicate cements including MTA, also improving manageability and the setting time.

### **- Oral Presentation 71**

**TITLE: Lithium disilicate-based ceramics: step by step of the adhesive cementation**

**AUTHORS: Santos Puerta N, Otero Mena I, Souza Andrade J.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S34.**

\* doi:10.4317/jced.17643855

<http://dx.doi.org/10.4317/jced.17643855>

### **Introduction**

Advances in adhesive dentistry have improved the clinical performance of composite resins and dental ceramics. This success is due to the physico-chemical interaction across the interface between the adhesive and the ceramic surface. The cementation process is vital for the clinical success of all-ceramic restorations. Bonding to lithium disilicate -based ceramics is obtained by two simultaneous mechanisms: micromechanical retention provided by acid-etching of the ceramic surface with hydrofluoric acid and chemical bonds between the inorganic phase of the ceramic and the organic phase of the resin cement by the application of a silane.

### **Case report**

A healthy 34-year-old woman was referred to the Master of Endodontics and Operative Dentistry (Rey Juan Carlos University, Alcorcón, Spain) with a deficient composite veneer and root canal treatment in a maxillary left lateral incisor (2.2). The restorative treatment was determined according to the amount of remaining tooth. Then, it was chosen a plan for the treatment based on canal retreatment, core build with composite resin and placement of a fiberglass post, and finally cementation of a lithium disilicate crown.

### **Conclusions**

The clinical success of these ceramic restorations depends on the cementation procedure, therefore it is necessary to follow judiciously all the steps that that this procedure demands this procedure in order to obtain excellent aesthetic, biological and functional results.

### **- Oral Presentation 72**

**TITLE: Effects of EDTA on Wave-One files**

**AUTHORS: Seguí Troth A, Castillo Felipe C, García de Carellán R, Báguena Gómez JC.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S34.**

\* doi:10.4317/jced.17643856

<http://dx.doi.org/10.4317/jced.17643856>

### **Objectives**

To evaluate the action of 15% EDTA as intracanal lubricant on Wave-One files after five root canal preparations.

### **Materials and Methods**

Forty-five root canals were instrumented using Wave-One™ Endodontic Reciprocating System. A total of 9 files were used, divided in 3 groups (n=3 each): (1) Wave-One Small #21, (2) Wave-One Primary #25, (3) Wave-One Large #40 files. All biomechanical preparations were done according to manufacturer instructions until work length (1 mm short of the apical foramen) and all the files were lubricated with EDTA. Wave-One Files were sterilized with glutaraldehyde (60') after each use and were studied under microscope (40x) after first, third, fifth use and without using.

### **Results**

No differences were observed after the first use in comparison with the un-used files. Surface wear was observed in apical and middle area of the file in 100% of Small #21 Files; only apical wear in 100% of Primary files and 33.3% of Large files.

After the fifth use, all Small files broke in apical third (100%). 66.6% of Wave-One Primary #25 files presented corrosion. Blade loss was observed in 100% of Wave-One Small files, 66.6% of Wave-One Primary files and 33.3% of Wave-One Large files.

### **Conclusions**

The use of EDTA seems to limit the number of biomechanical preparations with Wave-One files, particularly of Small #21 files which must be used just once. The files remaining could be used up to 3 times at the most.

### **- Oral Presentation 73**

**TITLE: Full upper arch restoration with composite and ceramics**

**AUTHORS: Sepúlveda Tendillo S, Faus Matoses V, Faus Matoses I, Alegre Domingo T, Faus Llácer VJ.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S34.**

\* doi:10.4317/jced.17643857

<http://dx.doi.org/10.4317/jced.17643857>

### Introduction

Dental erosion and attrition involve an aesthetic and functional impairment for the patient, especially in the anterior region. The improvement of the adhesive techniques allows minimally invasive treatments preserving as much tooth structure as possible.

The incorporation of diagnostic tools, such as Digital smile design, enables more predictable outcomes, and the communication with both, patient and dental technician.

### Case report

A 65 years old woman presented to the dental practice complaining of hypersensitivity and loss of tooth structure and wishing to improve the esthetics of the anterior region. During clinical examination, wear facets were observed in anterior and posterior regions. Digital Smile Design analysis was carried out in order to predict and plan the final smile design.

After removing the previous fillings and with the help of a diagnostic wax up, a clear silicone splint was prepared and filled with Ceram X duo (Dentsply DeTrey, Konstanz, Germany) microhibrid composite which was used to increase the vertical dimension of the patient. The palatal surface of anterior teeth and occlusal surfaces of posterior teeth were restored with composite. Finally, the buccal surfaces of 1.3 to 2.5 were prepared for feldspathic coreless veneers (Noritake, Japan) and were cemented with light-curing cement calibra and the XP Bond (Dentsply DeTrey, Konstanz, Germany) adhesive. The abutments 1.5 and 1.6 were prepared for the fitting of the partial fixed denture from 1.4 to 1.6.

### Conclusions

After the treatment, the dental hypersensitivity subsided, so the functional and aesthetic expectations of both, patient and dentist were met.

## - Oral Presentation 74

**TITLE: Superficial pulpotomy in Immature Permanent Molars: Calcium Hydroxide, Pro-Root MTA, MTA-Angelus and Bioceramic: Case series**

**AUTHORS: Sierra Armas L, Soto Pereira E, González Rodríguez M, Peña Alcázar M, Zubizarreta Macho A, Rico Romano C, Mena Álvarez J.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S35.**

\* doi:10.4317/jced.17643858

<http://dx.doi.org/10.4317/jced.17643858>

### Introduction

In the pulp exposure in young teeth, numerous materials have been proposed as candidates for treatment in pulpotomy. So much in pulpotomy superficial as cervical, pulp vitality therapeutic proposes maintaining the pulp tissue in order to stimulate the development of root processes and avoid possible subsequent fractures. Calcium hydroxide, with a long history of success in their results has been the material of choice. Currently, the appearance of materials like MTA, allowing tisular regeneration, and bioceramic cements as acting bioactive substitutes of the dentin, allow the survival of the remaining pulp through a hermetic seal.

### Case report

We propose four cases of young permanent teeth with pulp exposure for caries referred to the department by the Master in Clinical Endodontics and Microsurgery Periapical of University Alfonso X El Sabio. Pulpotomy partial decay conducted with calcium hydroxide, gray Pro-root MTA, white MTA Angelus, and Retro-MTA (bioceramics) respectively and compared, immediate results, after 45 days and spent six months finding, from the clinical point of view and radiographic, no differences between them.

### Conclusions

Pulpotomy (partial and cervical) in young permanent immature teeth is a safe treatment with a few predictable results as long as it's done in the precise indication, not finding significant differences between the materials used from a clinical point of view.

## - Oral Presentation 75

**TITLE: Retreatment of a 1.5 with apical root resorption**

**AUTHORS: Souto Míguez A, Fernández Alonso P, Guerra Caamaño M, Rivas Mundiña B, Varela Patiño P, Martín Biedma B,**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S35.**

\* doi:10.4317/jced.17643859

<http://dx.doi.org/10.4317/jced.17643859>

### Introduction

The external apical root resorption is a lytic process, which happens in the cement, dentin or both. Some of the possible classical described causes of resorption are: trauma, orthodontic treatment, intracoronal bleaching or a surgical procedure. Another cause of resorption recently mentioned in the literature is in teeth with endodontic treatment in which the bacterial products

were not successfully eliminated, remaining its activity in the future. Therefore, the treatment protocol consist in eliminating the bacterias and byproducts in the root canal system and dentinal tubules in order to stop the inflammatory process and allow a correct regeneration of the periodontium.

### Case report

Woman of 22 years old who attends the surgery because of the pain she feels in the second quadrant. A periapical radiograph is taken and the corresponding diagnosis is a periapical lesion in the tooth 1.5 (endodontically treated). We start the retreatment eliminating the fiber posts and sealing the last apical 6mm with MTA© (Dentsply Maillefer) because of the root resorbtion, after an intermediate cure with calcium hydroxide. In the third appointment we filled the rest of the root canal with gutta-percha. The final restoration was done with a lithium silicate crown. In the X-ray-controls done during the last two years after the treatment, we can see the total healing of the lesion.

### Conclusions

The mineral trioxide aggregate is the therapeutic choice to seal big apical diameters resulting from apical resorptions; a complete bone and periodontal healing in the perirradicular region was achieved in the case presented.

## - Oral Presentation 76

**TITLE: Percentage of success in non-surgical root canal retreatment. A retrospective study**

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

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S36.**

\* doi:10.4317/jced.17643860

<http://dx.doi.org/10.4317/jced.17643860>

### Objectives

The aim of this study was to evaluate the percentage of success in non-surgical root canal retreatment and to determine the influence of various factors on the prognosis.

### Materials and Methods

A total of 77 patients with 87 previously endodontically treated teeth were included in this retrospective study. The follow-up period was at least 24 months. The Local Ethics Committe on Investigations Involving Human Subjects reviewed and approved the protocol. All

participants signed an informed consent. The patients were referred to the Master in Restorative Dentistry and Endodontics, University of Valencia, between 2009 and 2012. The operators worked with operating microscope and followed the same sequence of retreatment for all the cases. The teeth were classified according to their dental group and by presence or absense of periapical lesion radiographically detectable at the beginning of the treatment. It was also assessed the preservation or not of the initial root canal morphology. The classification proposed by Gorni et al. was used for this purpose. In order to evaluate the degree of healing, Kvist classification was employed.

### Results

The overall success of nonsurgical retreatment was 83.9% after an average follow-up period of 28.5 months. Complete healing was observed in 41 teeth (47.1%) and incomplete healing in 32 (36.8%). A total of 14 teeth failed (16.1%). The highest percentage of success (94.7%) were obtained in cases with canal morphology respected and without periapical lesion at the initial appointment.

### Conclusions

Non-surgical retreatment is a highly predictable procedure with a high percentage of success. Further investigation is required to determine the importance of other prognostic factors on the outcome of retreatment.

## - Oral Presentation 77

**TITLE: Mesostructure of pink porcelain-composite in risked anterior esthetic by dental implants**

**AUTHORS: Valenzuela Triviño V, Jiménez Martínez JD, Urrejola Ballesteros A, Rodríguez Pérez M, Otero Ávila A.**

**SOURCE: J Clin Exp Dent. 2014 1;6 (Supplement1):S36.**

\* doi:10.4317/jced.17643861

<http://dx.doi.org/10.4317/jced.17643861>

### Introduction

Anterior front rehabilitation with implants can have aesthetic consequences if parameters of ideal placement are not respected so it can derive in deficit of support tissues, both bone and soft tissue. An artificial material, like porcelain or pink composite, could be a good alternative to solve this problem, but due to the aesthetic limitations, other therapeutic alternatives might be considered.

### Case report

44-year-old patient comes to the Máster of Aesthetics demanding a more aesthetic solution than the rehabilitation with two crowns screwed over implants in the anterior front. Crowns were placed to vestibular to compensate the incorrect emergence of the implants and it appeared a periimplantary soft tissue defect which was tried to solve with pink resin.

After aesthetic analysis with Digital Smile Design, another therapeutic options were evaluated and eventually it was decided using connective tissue graft and a mesostructure screwed to one of the implants, the other one was not loaded. Two lithium disilicate crowns were cemented to the mesostructure and same material veneers were done in the rested teeth of anterior sector. To solve the soft tissue problem, pink porcelain mesostructure combined with pink composite were used according to the Coachman and cols technique.

### Conclusions

In cases of excessively soft and bony tissue deficit, where surgical techniques are limited, prosthetic mesostructures with pink porcelain combined with pink composite can be a suitable solution.

## - Oral Presentation 78

**TITLE: Dentists attitude towards deep dental caries**

**AUTHORS: Villalta R, Fuentes MV, Ceballos L.**  
**SOURCE: J Clin Exp Dent. 2014 1;6**  
**(Supplement1):S37.**

\* doi:10.4317/jced.17643862  
<http://dx.doi.org/10.4317/jced.17643862>

### Objectives

To know the attitude of dentists of the First Region towards deep dental caries, since, according to scientific literature, the partial removal of caries, from primary or permanently asymptomatic teeth, is preferable to the complete removal in deep lesions, to reduce the risks associated with pulp exposure.

### Materials and Methods

To perform this work an anonymous on-line survey was elaborated (e-encuestas.com) with results automatically retrieved. This survey was sent to the dentists of the First Region via e-mail and social networks.

### Results

457 surveys were retrieved. 59% of those inquired believes cariogenic micro-organisms should be completely removed since, otherwise, the caries might progress;

53.7% of those inquired believes residual caries is a risk for the vitality of the pulp. 54.4% would eliminate the caries near the pulp even if there was evidence that the pulp does not present irreversible pathology, 51.4% uses dental excavators until hardness feeling of sound dentin when probed by hand instruments and 48.3% still uses a caries detector. 96.1% uses composite as restorative material for posterior teeth and, in case a cavity base is applied, 73.4% uses glass ionomer cement and 25.5% calcium hydroxide. 54.5% is unaware of the partial caries removal technique, but 85.6% would leave caries in the bottom of the cavity to preserve pulp vitality if there was enough scientific evidence.

### Conclusions

According to scientific evidence, updating the knowledge of deep caries treatment by the dentists of the First Region is required.

## - Oral Presentation 79

**TITLE: Photodynamic therapy as an adjunct to the root canal treatment. A series of cases**

**AUTHORS: Zubizarreta Macho A, Zorita García M, Alonso Ezpeleta O, Rico Romano C, Sierra Armas L, Mena Álvarez J.**  
**SOURCE: J Clin Exp Dent. 2014 1;6**  
**(Supplement1):S37.**

\* doi:10.4317/jced.17643863  
<http://dx.doi.org/10.4317/jced.17643863>

### Introduction

The anatomy of the root canal system is a surgical field of difficult access for the current disinfection systems. This makes the removal of bacterial deposits inside of the radicular canals difficult and it is responsible for a large number of secondary infections that it causes the loss of the affected tooth. That is the reason why therapeutic alternatives are required which favour the use of disinfecting agents. The disinfecting agents reduce the bacterial load present in the root canal systems and the results obtained by conventional disinfection systems have improved. One of the proposed systems is the photodynamic therapy or light-activated disinfection / or disinfecting with light. This system is minimally invasive, safe and biocompatible. This method does not generate bacterial resistance and it has shown some promising results in disinfecting root canals and as active therapy to traditional methods of disinfection of endodontic therapy.

### Case report

Four clinical cases for which applied the photodynamic therapy were exposed. Patients undergoing this clinical

cal procedure presented a clinical picture compatible with non-suppurative chronic apical periodontitis. The root canals of the affected tooth incorporating a light-activated disinfection method to conventional treatment took place. As an agent photosensitizer was used the toluidine blue O. The toluidine blue O was radiated by a source of light from a laser diode. Patients were required to make periodic reviews in order to analyze the result of this adjunctive procedure to the traditional methods of disinfection.

### **Conclusions**

The cases made by photodynamic therapy as a complement to the traditional root canal treatment have obtained a favourably evolution.