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Expertos en Salud Bucal
ALESSANDRO LOGUERCIO, DDS, MSc, PhD. Universidad Estadual de Ponta Grossa, Brasil

Lunes AM: Cómo aumentar la longevidad de la capa hibrida? – evidencia desde lo in vitro al meta-análisis

Mesa redonda: Sistemas adesivos actuales

Moderador - Eduardo Fernández (UC)
Invitados: Gustavo Moncesa (U Mayor), Felipe Gutierrez (UEPG-Brasil/UCChile), Gustavo Mahn (U Finis Terra), Cristian Bersezio (UCChile)

CHRISTOPHER McCULLOCH, DDS, PhD, FRCD. Universidad de Toronto, Canadá

Lunes PM: IL-1 Signal Transduction and Periodontal Health” (traducción)

Mesa redonda: Señalización celular en periodoncia

Moderador - Patricio Smith (UC)
Invitados: Constanza Martínez (UC), Rolando Vernal (UCChile), Ignacio Rotamel (UC)

GUSTAVO GARLET, DDS, MSc, PhD. Universidad de Sao Paulo, Brasil

Martes AM: Resposta imune inflamatória versus perda óssea periodontal/periapical: dos estudos experimentais a potencial aplicação clínica (tradução)

Mesa redonda: Señalización celular en periodoncia

Moderador - Rolando Vernal (UCChile)
Invitados: Cristian Cortez (U Mayor), Denise Bravo (UCChile), Carla Alvarez (UCChile), Gino Corsini (U Autónoma)

TIMO ARTO SORSA, DDS, PhD. Karolinska Institutet, Suecia

Martes PM: MMP-6 point-of-care (PoC))-diagnostics in periodontology, peri-implantology and related systemic diseases (traducción)

Mesa redonda: Biomarkers in oral fluids as a bridge between oral and systemic disease diagnostics

Moderador - Marcela Hernández (UCChile)
Invitados: Patricia Hernández (UCChile) - Mauricio Baeza (UCChile) - Alejandra Chaparro (UAndes)
PROGRAMA REUNIÓN ANUAL IADR DIVISIÓN CHILENA 2016

Lunes 8 de Agosto de 2016

08:00 - 08:30 Acreditación
08:30 - 09:00 Inauguración
09:00 - 10:00 Cómo aumentar la longevidad de la capa híbrida? – evidencia desde lo in vitro al meta-análisis. Prof. Dr. Alessandro Loguerco
10:00 - 10:30 Coffe Break
10:30 - 11:15 Mesa Redonda
11:15- 12:00 Presentaciones Orales 1 a 3
12:00 - 13:30 Almuerzo
13:30 - 15:00 Sesión de Poster
15:00 - 16:00 IL-1 Signal Transduction and Periodontal Health. Prof. Dr. Christopher McCulloch
16:00 - 16:30 Coffe Break
16:30 - 17:15 Mesa Redonda
17:15 - 18:00 Presentaciones Orales 4 y 5
Martes 9 de Agosto de 2016

08:00 - 08:45 Reunión Socios IADR
08:50 - 09:00 Inauguración de la jornada por el Presidente de IADR Región Latinoamericana
09:00 - 10:00 Resposta imune inflamatória versus perda óssea periodontal/periapical: dos estudos experimentais a potencial aplicação clínica. Prof. Dr. Gustavo Garlet
10:00 - 10:30 Coffee Break
10:30 - 11:15 Mesa Redonda
11:15 - 12:00 Presentaciones Orales 6 a 8
12:00 - 13:30 Almuerzo
13:30 - 14:55 Sesión de Poster
14:55 - 15:00 Presidente IADR Junior
15:00 - 16:00 MMP-8 point-of-care (PoC) - diagnostics in periodontology, peri-implantology and related systemic diseases. Prof. Dr. Timo Arto Sorsa
16:00 - 16:30 Coffee Break
16:30 - 17:15 Mesa Redonda
17:15 - 18:00 Presentaciones Orales 9 a 11
18:15 - 18:45 Premiación y Clausura
Lunes 8 de Agosto de 2016 (11:15 hrs)
1. Optical size reduction of white-spot lesions after resin infiltration treatment
2. Stem cell response to scaffolds based on polyurethane/nano-bioactive glass nanocomposites
3. Clinical effect of non-vital teeth bleaching with a walking bleach technique

Lunes 8 de Agosto de 2016 (17:15 hrs)
4. Cranial finite element models in dental sciences: validity and utility
5. Orthodontic intrusion: periodontal and root stability under protocol for patients with reduced periodontium

Martes 9 de Agosto de 2016 (11:15 hrs)
6. Identification of a novel compound with anti-HIV activity
7. Plasm concentration of Antibiotic Prophylaxis in Patients undergoing Dental Implant Surgery
8. Clinical effect of probiotics and antibiotic in treatment of periodontitis

Martes 9 de Agosto de 2016 (17:15 hrs)
9. Periodontal ligament stem cells proliferation under xeno-free culture conditions
10. Unbalance between inflammation and periodontal tissue healing in type 1 diabetes
11. Prediction of gestational diabetes using placental biomarkers in oral fluids
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Presentaciones Orales
Optical size reduction of white-spot lesions after resin infiltration treatment

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OBJECTIVE: This study aimed to evaluate dimensional optical changes in white spot lesions after treatment with Icon® resin infiltration system.

METHOD: 24 anterior teeth with white spot lesions in their buccal surface, in five different patients, were treated with Icon® resin infiltration system. Standardized digitalized photographs were taken before, during and after treatment. Images were processed using Adobe Photoshop CS5® in grey scale mode (with brightness set at -30%, and contrast at 100%). For each tooth, it was calculated the area of the white spot as a percentage of the entire buccal surface of the correspondent tooth, using the Quick Selection Tool (set at a 5% tolerance). Data was analysed with T-test for paired samples.

RESULTS: The 24 teeth with white spot caries lesions treated with Icon® resin infiltration system showed a reduction in size. The average percentage reduction of the size of the white spot was 13.76% (+/- 12.54%), with a range from 48.17% - 0.98% of reduction. The difference in size assessed with photographs before and after treatment was statistically significant (p<0.05).

CONCLUSION: Resin infiltration system reduces the size of white spot caries lesions, assessed with photographs in grey scale mode.

Stem cell response to scaffolds based on polyurethane/nano-bioactive glass nanocomposites.

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OBJECTIVE: To evaluate the cell response of dental pulp stem cells to bone tissue engineering scaffolds based on biodegradable polyurethane (PU) and bioactive glass nanoparticles (nBG).

METHOD: 3D porous bionanocomposite scaffolds were designed by using PU loaded with 2.5 and 5.0 wt.% nBG content. Cell assays were performed by incubating the scaffold material with DPSCs isolated from wisdom teeth for 1, 7, 10 and 14 days. Cell viability was quantitatively measured by using MTS colorimetric assay and qualitatively analyzed with AO/PI fluorescence. Cell adhesion on the scaffold surface was examined through scanning electron microscopy (SEM). Osteogenic differentiation of DPSCs was studied by quantitatively measuring the alkaline phosphatase (ALP) activity with the colorimetric Elisa kit and qualitatively by using NBT/BCIP staining.

RESULTS: nanocomposite scaffolds did not decrease the MTS viability of DPSCs, whereas AO/PI fluorescence images showed that cells cultured on PU with 5 wt% nBG apparently presented better viability compared to the neat PU scaffold. SEM images revealed a more intimate contact of cells with the surface of PU scaffold modified with the nBG nanoparticles as compared to the cells adhered on the neat PU scaffold. At 7 days of incubation, ALP production was only detected for the DPSCs cultured on the PU scaffolds loaded with nBG. When the cells were incubated for 14 days with the materials, no differences in ALP production were observed.

CONCLUSION: PU nanocomposite scaffolds loaded with nBG are cytocompatible and improve the cell adhesion response as compared to neat PU scaffold. In addition, the nanocomposite scaffolds accelerate the osteogenic differentiation of DPSCs as measured by the ALP production. The bionanocomposites appear as a promising alternative for further studies related with bone tissue regeneration.
Cranial finite element models in dental sciences: validity and utility

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OBJECTIVE: Finite element (FE) analysis is a modelling technique increasingly used in dental sciences to investigate skeletal response to trauma and prosthetic or other treatment. Whether FE models (FEMs) are valid is not always assessed, thus limiting the interpretation of results and the inferences derived from them. FEMs of a human cranium simulating an incisor bite were built using different reconstruction approaches and validated against experimental data obtained from the same individual, aiming to understand how FE validity can impact on dentistry/medical studies of cranial performance under loads.

METHOD: The cadaveric head of an adult was experimentally loaded to simulate an incisor bite. Using digital speckle interferometry, we measured the strains from the infraorbital region and frontal process of the maxilla caused by the load. Five FEMs of the same head were built varying its anatomy and material properties, and loaded to replicate the experimental conditions. Measured and predicted strains magnitudes and modes of deformation were compared.

RESULTS: Distributions of regions of high and low strains as well as modes of deformation predicted by the most detailed FEM are overall similar to those achieved in vitro. Values of strain magnitudes are in comparison more sensitive to some of the most common FEM building approaches: representing cancellous bone as solid cortical bone (which lowers strain magnitudes) and omitting thin structures of the nasal and paranasal cavities (which increases strain magnitudes and affects modes of deformation).

CONCLUSIONS: When strain distribution and modes or deformation are of interest, models built with necessary, common simplifications as those used here can be considered useful. However, the high sensitivity to building decisions of strain magnitudes, which are generally used to predict bone modeling/remodeling processes and bone fracture, calls for caution in the interpretation and inferences made from not-validated FEMs.

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Orthodontic intrusion: periodontal and root stability under protocol for patients with reduced periodontium.


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OBJECTIVE: To evaluate the periodontal stability of upper incisors extruded by pathological tooth migration due to periodontal disease in orthodontic patients with periodontal protocol for reduced periodontium.

METHOD: Two male patients, with an average 53 years of age, with extrusion of central incisors for periodontal disease. They receive nonsurgical periodontal treatment and during the supportive periodontal therapy are undergoing orthodontic treatment under the protocol for patients with reduced periodontium cementing differentiated brackets according to bone level and the application of mild and intermittent forces to achieve orthodontic intrusion. Periodontal clinical parameters such as gingival recession (RG), probing depth (PS), clinical attachment level (NIC) and radiographic parameters with Cone Beam, pre and post orthodontic treatment are evaluated.

RESULTS: In year 1 of orthodontic treatment, the incisors are intruded with an average reduction of RG = 2.3 mm, PS = 3.2 mm, NIC= 3.5 mm and no observable changes in root anatomy with Cone Beam.

CONCLUSIONS: Orthodontic intrusion under the protocol for patients with reduced periodontium improving periodontal clinical parameters, keeping the periodontal stability of the incisors intruded and does not cause changes in the root anatomy, resolving the functional and aesthetic problems of patients.

Identification of a novel compound with anti-HIV activity

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OBJECTIVE: The screening of natural sources historically led to the discovery of many clinical drugs currently used in therapy. Due to its widespread and medicinal importance, the aim of this study was to investigate the extract and fractions of Malva sylvestris for anti-HIV activity in vitro.

METHOD: M. sylvestris Leaves (voucher #ESA121403) were used to obtain the ethanolic extract (MSE, 1:8 g/L) and polarity gradient fractionation was conducted. Further, biological assays were conducted to detect antiviral activity, envelope p24 protein and transcriptional target genes (CD4, TRIM5 and Bcl-2) and cytokines expression by array screening technique. Thus, we investigated the mechanism of action using HIV-RT reverse transcriptase test. Chemical identification was performed by HPLC and mass spectrometry. Statistical analysis was performed using STATA (Texas, USA) software.

RESULTS: The results unveiled the potential anti-HIV activity of the aqueous fraction of M. sylvestris in concentrations of 25 µg/mL and 50 µg/mL in model TZM-bl cells reducing viral infection by 60% (p<0.01). The p24 viral proteins were inhibited and the transcription of the genes (CD4, TRIM5 and Bcl-2) controlled a reduction of signaling proteins linked to the inflammatory process, IL1-alpha, IL-beta, IL-6, IL-8 and GM-CSF were observed (p<0.01). The anti-HIV activity shown was associated with the inhibition of HIV-RT enzyme. The biological tests were conducted with respective controls and compared to Zidovudine (Sigma) standard. Chemical analysis revealed the presence of a flavonoid as a major compound in the aqueous fraction.

CONCLUSIONS: A novel compound of Malva sylvestris demonstrated promising biological potential as an inhibitor of HIV-1Bal in vitro.
Plasm concentration of Antibiotic Prophylaxis in Patients undergoing Dental Implant Surgery

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OBJECTIVE: The use of antibiotic prophylaxis in implant dental surgery is a routine dental practice to prevent implant failure. Nevertheless, current systematic reviews still not confirm the effectiveness of antibiotic treatment to reduce postoperative infection rates in dental implant procedures. The assessment of real plasma levels due to the antibiotics intake may be considered. Thus, the aim of this study was to quantify serum and tissue levels of amoxicillin of patients undergoing dental implants surgery using HPLC technique.

METHODS: A clinical trial involving 32 patients (mean age: 56.28±12.2 years; range: 31-79; 20 males) was conducted. Preoperative doses of amoxicillin 1 g, given by oral tablets, one day prior of implant surgery were administered. The samples were collected for both serum vein and drill implant osteotomy obtaining 1.5 mL in total. Data about the antibiotics was measured using HPLC technique. The quantification method was validated for linearity, selectivity and limits of detection. Statistical analysis was performed using STATA (version 10.0, USA).

RESULTS: The average of amoxicillin concentration in implant osteotomy reached 5±2.63 μg/mL (range: 2.04-11.18) while serum vein levels were 4.21±2.12 μg/mL (range: 1.6-9.98) (p=0.33 Wilcoxon test). There correlation between the body mass index and antibiotics serum/wound levels were analyzed and no correlations were observed.

CONCLUSION: The plasmatic concentration of a prophylactic dose of amoxicillin one day before implant dental surgery is ten times higher than observed on minimal inhibitory concentration needed for bacteria responsible for periimplantitis and periodontal diseases.

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Clinical effect of probiotics and antibiotic in treatment of periodontitis

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OBJECTIVE: The objective of this study was to evaluate clinical effects of Lactobacillus rhamnosus SP1- containing probiotic and azithromycin as an adjunct treatment to periodontal therapy for chronic periodontitis patients.

METHOD: Randomized placebo- controlled clinical trial was conducted. Fifty-six chronic periodontitis patients were recruited and monitored clinically at baseline, 3 and 6 months after scaling and root planing (SRP). Examination consisted of full mouth probing pocket depth, gingival recession, clinical attachment level, plaque index and bleeding on probing, measured at six sites per tooth. Also, “risk for disease progression” (Lang & Tonetti, 2003) and “in need for surgery” was defined at the patient level (Cionca et al. 2009). All patients received SRP and randomly assigned over a probiotic (SRP+ L. rhamnosus SP1, n=19), antibiotic (SRP+ Azithromycin, n=19) or control (SRP+ placebo, n=18) group. Powder for oral suspension containing L. rhamnosus SP1 was used once a day for 3 months. Azithromycin (500mg) was used once a day for 5 days. All subjects received supportive periodontal therapy every 3 months.

RESULTS: No statistically significant differences were observed between groups for any parameters evaluated at baseline. Therapies equally reduced clinical parameters. Analysing data according to the individual risk profile for periodontal disease progression, revealed that significantly fewer patients had a high risk for disease progression when they received the SRP+ probiotic and SRP+ antibiotic treatment (p<0.05). However, in SRP+ probiotic group, significantly fewer patients required surgery on 6th month after SRP (p<0.05). All patients entering the study completed it. Adverse event was reported by only one subject from antibiotic group.

CONCLUSION: Oral administration of L. rhamnosus SP1 could be a useful adjunct to SRP in patients with chronic periodontitis who received supportive periodontal therapy. Clinical results indicate that this probiotic could be an alternative to azithromycin in treatment of chronic periodontitis.

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Periodontal ligament stem cells proliferation under xeno-free culture conditions

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**OBJECTIVE:** The goal of periodontal regenerative procedures is to reconstitute all periodontal tissues involving cell therapies as a promising alternative. The use of human periodontal ligament stem cells (HPLSC) as part of future regenerative therapies has been evaluated and its isolation in vitro have involved the use of culture media and supplementation with fetal bovine serum (FBS) as a source of growth factors. However its use is not allowed on cell therapies due to potential immunological reactions or animal prions diseases transmission. Recently, animal proteins-free culture media (xeno-free) has emerged as an alternative for in vitro expansion of mesenchymal stem cells. In this study we evaluated the proliferative ability of HPLSC using a novel xeno-free culture media.

**METHOD:** Primary cultures of HPLSC were obtained from healthy donors after signing an informed consent. The local ethics committee approved this study. From periodontal ligament explants cells were expanded using conventional culture conditions (DMEM + FBS 10%). Then, cells were seeded and incubated with MSC NutriStem® plus XF SupplementMix during 3 or 5 days. After treatment, cells were fixed and immunostained to evaluated PCNA or Ki67 proliferation markers and F-actin to evaluate actin cytoskeleton.

**RESULTS:** HPLSC were able to proliferate on both conditions, however under xeno-free conditions we observed lower levels of HPLSC proliferation at both time points when compared to conventional media containing 10% FBS.

**CONCLUSION:** These results suggest for the first time a potential use of xeno-free media MSC NutriStem® to induce proliferation of HPLSC. However it is necessary to study the effect of these xeno-free media on the phenotype and differentiation potential for the development of predictable regenerative cell therapies in vivo.

Unbalance between inflammation and periodontal tissue healing in type 1 diabetes.

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**OBJECTIVES:** TGF-beta is a growth factor that stimulates the production of extracellular matrix molecules and reduces inflammation. Diabetes is characterized by a delay in periodontal tissue healing. Therefore, it is tempting to speculate whether TGF-beta activity is altered during diabetic wound healing. In the present study we have analyzed the regulation of TGF-beta activity, the development of inflammation and the amount of wound closure and connective tissue regeneration in gingivectomies performed in type I diabetic and non-diabetic rats.

**METHOD:** Type I diabetes was induced in Sprague Dawley rats by injecting streptozotocin and periodontal wounds were created in the upper gingiva. Wound healing was evaluated histologically at 2, 5, 7 and 14 days through H/E staining and immunohistochemistry for alpha-smooth muscle actin, pSmad2 and cell nuclei (DAPI). Collagen was evaluated through Red Sirius staining. The amount of inflammatory infiltrate was quantified at each time point. Epithelial migration was evaluated by morphometric assessment using image J. Statistical analysis was performed using the student’s t test.

**RESULTS:** Epithelial cell migration was delayed and a reduction in connective tissue healing was observed in diabetic rats when compared to non-diabetic animals. At two days post wounding inflammatory infiltrate was increased in non-diabetic rats. However, the amount of inflammatory infiltrate was increased at 5, 7 and 15 days in the diabetes group when compared to the non-diabetic rats. Smad2 phosphorylation was decreased in the diabetic group at 5 and 7 days when compared to its control.

**CONCLUSION:** Delayed wound healing in diabetes is associated an increase in the inflammatory infiltrate. The delayed connective tissue regeneration can be explained by a decrease in pSmad2 activation. Further studies are needed to identify critical pathways in the regulation of pSmad in diabetic wound healing.

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Prediction of gestational diabetes using placental biomarkers in oral fluids

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OBJECTIVES: Gestational Diabetes Mellitus (GDM) affects around 10% of all pregnancies. The current diagnosis of GDM is performed at 24–28 weeks of gestation. The objective of the present study was to explore placental biomarkers in maternal gingival crevicular fluid (GCF), and to determine if women who develops GDM shows a different profile of these biomarkers and determine their association with the severity of periodontal disease.

METHOD: We explored the presence and levels of placental alkaline phosphatase (PLAP), placental growth factor (PIGF) and Micro-vesicles (MVs) in GCF early in pregnancy (11-14 weeks gestation) and determined their association with the GDM development and with the severity of periodontal disease. For that purpose, we recruited 80 pregnant women and we took GCF samples and completed a questionnaire for maternal history. Additionally we evaluated the periodontal condition. All significant variables were integrated in a multiparametric model by logistic regression analysis.

RESULTS: 17.5% (n=14) of patients developed GDM. The BMI observed was 32.23Kg/m2 in GDM group and 26.15Kg/m2 in healthy pregnancies (p value = 0.0022). Periodontal surface inflamed area was 904.45mm2 in patients that developed GDM and 854.1mm2 in the control group. The mean values observed of PLAP levels in GCF for patients that developed GDM was 12.19ng/ml compared with 4.93ng/ml in the healthy pregnancies (p-value = 0.0919). PIGF levels were 0.76ng/ml in healthy patients and 4.24pg/ml in the case group (p-value = 0.0252).

CONCLUSION: Women that will develop GDM show significant differences in biomarkers detected in the GCF during the first trimester of pregnancy, and a multiparametric model could predict the development of GDM. Although this model needs further validation, this is an important step in the development of new biomarkers for the prediction of GDM.
Presentaciones
Poster
Mouse masseter depolarization evokes IL-1β/IL-6 expression through extracellular ATP

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OBJETIVE: To assess the role of electrical stimulation (ES) over myokines expression (IL-1β and IL-6) in mouse masseter muscle, and their dependence on the extracellular ATP signaling pathway.

METHODS: Masseter muscles from 6-8 weeks-old mice were isolated and semi-digested. mRNA for P2Y/ P2X, receptor subtypes, IL-1β and IL-6 were assessed by qPCR at resting conditions or/and after ES (20 Hz, 270 pulses, 0.3 msec each). Expression of proteins related with the signaling pathway were assessed by immunoblot or immunofluorescence. ATP release evoked by ES was quantitated by a luciferin-luciferase assay. 2U/ml Apyrase (ATP metabolizing enzyme) or 100 µM Suramin (P2Y/ P2X general blocker) was used to assess the ATP dependence of the effects observed with ES.

RESULTS: Expression of mRNA for purinergic receptors P2Y(1,2,13,14) and P2X(4,6) was demonstrated in mouse masseter. The proper expression of dihydropyridine receptor, P2Y2 and pannexin1, previously involved in gene expression control in limb muscles, was demonstrated by immunoblot. P2Y2 and pannexin1 expression was also detected by immunofluorescence in masseter isolated myofibers. ES evoked a 2.5-fold increase in extracellular ATP as soon as 15 sec after stimulation, with a total decay after 10 min. Both ES and 100 µM ATP evoked an increase in IL-1β (15-fold increase with ES, 2000-fold increase with ATP) and IL-6 (90-fold increase with ES, 13-fold increase with ATP) mRNA levels. The cytokine mRNA increase evoked by ES was significantly reduced when apyrase or suramin were used (p<0.05).

CONCLUSION: In this work we demonstrate for the first time that masseter muscle depolarization releases ATP that is a relevant mediator for increasing the expression of IL-1β and IL-6. A signaling model of “excitation-transcription coupling” similar than occurring in trunk and limb muscles is here described for masticatory muscles. Implications of this pathway in physiological adaptations will be addressed.

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Association between temporomandibular disorders (TMD) and emotional status between university students.

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OBJECTIVE: The aim of this study was to investigate the association between TMD and emotional status in adolescents.

METHOD: The sample of this cross-sectional study consisted of 763 adolescents from Caxias, Maranhao-Brazil. The presence of TMD pain was assessed using the RDC/TMD. Data from demographical characteristics, sex, age, psychosocial aspects were colected. Multinomial logistic regression models were used to identify the influence of sociodemographic characteristics and depression in the diagnosis of TMD in university research participants.

RESULTS: Painful TMD had a prevalence of 63,8%. Moderate and severe depression were present in 47,6% of students. Logistic regression analyses showed that moderate depression was associated with moderate TMD (OR=3,05 CI= 1,79-5,21) and severe TMD (OR=6,82 CI=4,03-11,55). Severe depression was associated with moderate TMD (OR=5,11 CI=2,14-12,21) and severe TMD (OR=12,51 CI=5,58-28,08).

CONCLUSIONS: The authors had conclude that were a strong association between the investigated disorders.
Schwann cell network organization in human dental pulp

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OBJECTIVE: Human dental pulp is a particularly innervated tissue. Trigeminal sensory axons form complex terminal arborizations along the pulp-dentin interface. Schwann cells are essential for the support of axons in the peripheral nervous system. However, the precise organization of Schwann cells within the human dental pulp remains poorly understood. The aim of this study was to comparatively describe the organization of Schwann cells and their relationship with the peripheral nerve network in the human dental pulp.

METHODS: Forty-five human permanent premolar and molar teeth were extracted under clinical indications from young and adult individuals. Teeth were fixed in 4% PFA and decalcified with EDTA. Longitudinal cryosections were assayed for immunohistochemical analysis using markers for glia (GFAP, S100, p75 NTR and MBP), axons (NF) and immunocompetent cells (HLA-DR). Three-dimensional image stacks of Schwann cells and associated axons were acquired with confocal microscopy.

RESULTS: Schwann cells form a complex and highly organized network along the whole length of the peripheral dental pulp, in correspondence with the subodontoblastic nerve plexus of Raschkow in young teeth. Schwann cells exhibit two basic morphologies, depending on non-myelinating or myelinating conditions. Within the odontoblast layer, non-myelinating Schwann cell profiles are closely associated with unmyelinated nerve endings, forming an intricate plexus at the predentin interface. In adult teeth, major changes are evident in the three-dimensional organization of the Schwann cell network compared to young teeth. We observe both a reduction of non-myelinating and myelinating Schwann cell profiles, together with a decrease of myelinated axon bundles in aged teeth.

CONCLUSIONS: In conclusion, our study revealed the presence of an intricate three-dimensional Schwann cell glial network that gives support to dental pulp axons. The decrease in myelinating Schwann cells and myelinated axons may contribute to reduced dental sensitivity with age. The present study validates Schwann cells as a crucial population of dental pulp cells.

Sexual Hormones effects in Human Gingival Mensenchymal Stem Cells proliferation

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OBJECTIVE: Determine proliferation effects of sexual hormonal in Gingival Mesenchymal Stem Cells (hgMSCs)

METHOD: Four groups of hgMSCs were cultivated in DMEM without red phenol and FBS treated with activated carbon. Group 0 was the control group and the other 3 were stimulated with 3 different types of sexual hormones (group 1= Progesterone, group 2= Estradiol and group 3= Progesterone with Estradiol). Each sexual hormone stimuli was used in 5 different concentrations during 24 or 48 hours on hgMSCs. To evaluate the proliferation of hgMSCs in contact with the different types of sexual hormone and concentrations compared to the control group, we used a reagent that measures the mitochondrial activity of the alive and proliferative cells: WST-1.

RESULTS: The 4 groups showed alive hgMSCs. From the 3 types of hormonal stimuli, Estradiol showed the least increase in cell number (p<0.05) for both stimulation times (24 and 48 hours). The mayor increase in cell number was observed at 24-hour stimuli with Progesterone (in a concentration of 0,5 ug/L) and Progesterone with Estradiol (in a concentration of 0,4 ug/L with 18812,5 pg/ml respectively) compared to Estradiol (p<0.05). When comparing the 3 types of sexual hormonal stimuli versus the control group, Estradiol was the only that showed statistical difference in the cell number achieved for both stimulation times (24 and 48 hours) (p<0.05).

CONCLUSION: The viability of the cells with the different sexual hormone concentration was not affected. We were able to identify that hgMSCs showed least increase in cell number when stimulated with Estradiol and that there was no significant change in the proliferative effects in hgMSCs due to Progesterone and Progesterone plus Estradiol stimuli compared to control group. These findings are in accordance with what is shown in the literature where it has being demonstrated that Progesterone has no effect in the proliferation of MSCs.
Association between Mmp20 gene polymorphisms and dental fluorosis in genetically distinct mice

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**Objective:** It has been demonstrated that certain strains of mice are more susceptible than others to dental fluorosis, which makes these strains the ideal model to study the molecular phenomena involved in this defect of development. It is known that several genes expressed in amelogenesis control these phenomena. However, the role of polymorphisms in Mmp20 gene encoding structural proteins and proteases resident in enamel fluorosis is still unknown. Thus, this study aimed to evaluate the association between polymorphisms in Mmp20 gene with dental fluorosis phenotype using mice susceptible or resistant to this disease.

**Methods:** Mice of both genders, representing strains 129P3/J (n=12; resistant) and A/J (n=12; susceptible) were divided into two groups for each strain that were received diet with low concentration of fluoride (F) and drinking water containing 0 or 50 mg/L F for 6 weeks. At the end of the experimental period, the animals were anesthetized, liver tissue and maxillary incisors were collected for genomic DNA extraction and Vickers microhardness test, respectively. For polymorphisms analyses allelic discrimination was performed using real-time PCR. Association between dental fluorosis, genotype, and allele distribution were evaluated using chi-square and logistic regression analyses with an alpha level of 5%.

**Results:** Enamel microhardness (Kgf/mm2) 343.3±17.12, 302.2±16.85, 294.7±20.53 and 88.5±6.71 for 129P3/J control, A/J control, 129P3/J treated and A/J treated, respectively. Significant differences in enamel microhardness were observed for both strains and treatments (p<0.05). There were differences between dental fluorosis susceptibility and genotype distribution between the groups (p=0.0001).

**Conclusion:** Genetic variation in Mmp20 may be associated with dental fluorosis. As future perspective, the identification of genetic polymorphisms associated with dental fluorosis in this experimental model might support the selection of candidate genes for this disease in human populations living in endemic areas of fluorosis.

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Prevalence of early childhood caries in rural Higuera, Chile 2016

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**OBJECTIVE:** To assess caries prevalence and severity in children living in rural Higuera, Chile, 2016.

**METHODS:** Descriptive prevalence study. Invitations consent forms and questionnaires were distributed to all preschool children from Higuera, Chile (N = 225) at school for completion at home. Inclusion criteria were children up to 71 months, children without illness, children belonging to the rural commune of La Higuera, children whose parents signed consent. Exclusion criteria difficult to handle children. Of all the children of the commune of the registered Higuera in March 2016 were considered eligible (225) with an alpha error = 0.05 and confidence Level = 95%, a random sample was chosen. The participants were examined at two examiners (Kappa inter=0.82). Early childhood caries (ECC) was defined using the American Academy of Pediatric Dentistry criteria. And to assess the severity measured by the index ceo (d). Measuring cavities included cavitated lesions (c3) and noncavitated (c1).

**RESULTS:** Final simple was 143 children (62,5% male, 37,5% female). Average age 5.1 years old (standard deviation 0.83). Prevalence of ECC was 67,9% (62,4% for male; 74%for female). This difference was not statistically significant (p = 0.06)

**CONCLUSION:** Prevalence of ECC in rural zone of Chile is high. This results suggest that intervention at 6 year old is too late and preventive programs tailored to rural zones and preschoolers children should be implemented.
Effect of probiotic-supplemented milk in caries progression in preschool children

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OBJECTIVE: The main objective was to compare milk supplemented with probiotic lactobacilli with standard milk for the progression of caries in preschool children after 10 months of intervention.

METHOD: The present study is a secondary analysis of a database obtained through a triple blind randomized comunitary controlled trial in which the intervention was to supply milk enriched with probiotic supplement to children and evaluate the progression of the dental caries lesions through comparing the control group that didn’t receive the supplement. The measures were made through ICDASII criteria.

RESULTS: The results obtained don’t establish differences statistically significant in the progression of the dental caries lesions between both groups.

CONCLUSION: There is no difference of the probiotics in the progression of the dental caries lesions in children that consume regularly milk enriched with probiotic versus the ones who don’t consume probiotics.

Anticariogenicity of unsaturated fatty acids in a dual caries-biofilm model.

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Objectives: To evaluate the capacity of unsaturated fatty acids to inhibit cariogenicity of sucrose in a dual-species caries model with biofilms of S. mutans and S. sanguinis.

Methods: A novel anticaries dual-species model was developed, comprising biofilms of S. mutans UA159 and S. sanguinis SK36. Equal amounts of both species were cultures on saliva-coated bovine enamel slabs. During 5 days, biofilms where subjected to an intense cariogenic challenge caused by immersion in 10% sucrose 3 times per day for 5 minutes. Immediately after sucrose, biofilms were exposed to 100, 10 or 1 mM solutions (v/v) of oleic or linoleic fatty acids. A solution of 0.05% NaF was used as an anticaries-positive control and another of 0,9% NaCl as the anticaries-negative control. Culture medium was changed twice per day and pH was measured before each change. Biofilms were separated from the slabs and biomass, viable bacteria and protein concentration were analyzed. Acidogenicity was obtained from pH readings of the spent medium and demineralization was estimated by Knoop microhardness. The experiment was independently repeated, in triplicate (n=6). Significant differences were estimated at p<0.05 by ANOVA.

Results: A significant reduction in acidogenicity was detected upon exposure to 100 mM and 10 mM linoleic acid and 100 mM oleic acid. Acidogenicity was even lower than that obtained with 0.05% NaF (p<0.05). Biofilms treated with sucrose followed by 100 mM linoleic acid showed the lowest demineralization, followed by 10 mM linoleic and 100 mM oleic acid, similar to 0.05% NaF. Likewise, viable cells showed similar results, with the lowest counts upon exposure to sucrose and 100 mM linoleic acid (p<0.05). Biomass and total proteins did not show differences across the treatments (p>0.05).

Conclusions: Oleic and linoleic fatty acids appear to reduce sucrose cariogenicity, in a dose-dependent manner, when tested in a dual-species biofilm-caries model.

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Cariogenicity of milk depending on fat content, experimental caries model.

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OBJECTIVE: It is unclear the role of milk’s fat and fatty acids on the cariogenicity of the dairy product. The aim of this study was, therefore, to evaluate the effect of the presence or absence of fat in bovine milk, on a caries model with biofilms of Streptococcus mutans.

METHOD: Biofilms of Streptococcus mutans UA159 were formed on saliva-coated bovine root dentin slabs. Slabs/biofilms were exposed 8 times/day to the following treatments: 0.9% NaCl (caries-negative control), 4.5% lactose (active control), 4.5% sucrose (caries-positive control), skimmed, semi-skimmed or whole milk. The acidogenicity of the biofilm was analyzed twice/day measuring the culture medium pH. After 120 hours of growth, biofilms (n=12) were collected and biomass and polysaccharides were determined. Dentin demineralization was assessed by percentage of surface hardness loss (%SHL). Results were compared by ANOVA and Tukey's test.

RESULTS: At 96 hours of biofilm growth, biofilms treated with skimmed, semi-skimmed milk or 4.5% lactose induced a drop (p<0.05) in medium pH. Whole milk showed medium pH similar (p>0.05) to the negative control. There was no difference (p>0.05) in the medium pH among the different milk types in the time points evaluated. Biomass production and insoluble extracellular polysaccharides were similar (p>0.05) among the three different milk groups and 4.5% lactose. No significant difference (p>0.05) between experimental groups was found in soluble extracellular and intracellular polysaccharides. Demineralization induced by whole milk was lower (p<0.05) than that caused by 4.5% lactose, 4.5% sucrose and skimmed milk.

CONCLUSION: The presence of a higher fat content in milk suggests a protective effect of the fatty acids against caries in root dentin.

Dental caries correlation with alkali production in biofilm of children

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OBJECTIVE: This cross sectional study assessed the enzyme activity of urease and arginine deiminase system (ADS) on dental plaque in 7 year-old children and correlated them with their experience and severity of dental caries.

METHOD: Fifty-nine 7 year-old children, were randomly chosen for assessment of the enzyme activity of urease and ADS on dental plaque. Calibration curves ammonium and total protein was performed to measure ammonium concentration and specific enzymatic activity of ADS and ureases by spectrophotometry. DMFT/dmft and ICDAS rates were gathered. Caries activity was scored and divided in 4 groups: caries free, low, moderate and severe. The dental plaque of children was sampled under fasting condition and children refrained from any oral hygiene procedures during the 12 hours that preceded the sample collection.

RESULTS: Increase activity of Urease and ADS on supragingival biofilm oral are associated with decrease of index DMFT/dmft and ICDAS.

CONCLUSIONS: There is significant negative associated between urease and ADS activity and caries severity. Therefore, concluded, increased history and severity of dental caries lower urease and ADS activity. This abstract is based on research that was funded entirely or partially by an outside source: FONIS SAE 13120205
Fluorosis is not associated with dental caries in 5-to-14-years-old children.

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Objective: To determine the prevalence and severity of dental fluorosis and its association with caries in children between 5 – 14 years old in Talca Province.

Methods: Cross-sectional study was conducted. Sample included 1139 children between 5 – 14 years old from public schools in 7 municipalities of Talca Province. Teeth were assessed by 3 examiners Kappa intra and inter-examiner reproducibility was 0.94 for fluorosis and 0.91 and 0.97 for caries. Informed consent was obtained from children parents. Data were analyzed by U Mann Whitney, Fisher's exact and K-Wallis test.

Results: Fluorosis Prevalence 32%. 37.3% urban zone with highest prevalence of moderate and 18.7% rural zone with highest prevalence of very mild. Fluorosis prevalence for 5-6 years was 14.9%, 8-9 years 41.5% and 13-14 years 36.8%. All groups had higher prevalence of moderate severity. (p <0.001). Permanent incisors was most affected by fluorosis 34.4% and increased prevalence of very mild. Significant difference was found in middle of DMFT and deft between affected and unaffected by fluorosis (p 0.001, 0.015), the lowest median DMFT and deft was found on the affected group. No association was found between fluorosis and DMFT- deft (p 0.138 and p 0.368). No association between severity of fluorosis and DMFT – deft (p 0.48 and p 0.50).

Conclusion: Higher prevalence of fluorosis in urban zone and greater severity than in the rural zone. Lower median DMFT and deft was found in group affected by fluorosis. No association was found between fluorosis and DMFT - deft. No association between severity of fluorosis and DMFT - deft.

Randomized controlled clinical trial on the treatment of caries lesions using resin or glass ionomer sealants in permanent teeth. 12 months follow.

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Objectives. To compare clinical and radiographic progression of micro-cavitated carious lesions (ICDAS code 3) treated with resin sealant or glass ionomer cement (GI) in first permanent molars.

Methodology. A randomized controlled clinical trial (RCT) was conducted in children between 6 and 11 years old. Systemically healthy children with at least one carious lesion ICDAS code 3 in the first permanent molars were recruited. Clinical diagnosis by ICDAS and radiographic assessment by standardized bitewing radiographs was performed by three trained and calibrated examiner. One hundred and fifty ICDAS 3 lesions were randomly allocated into the two arms of the RCT, resin or GI sealants (75 lesions by group). Statistical analysis were performed by Z Test with a significance level of 5%.

Results. After 12 months of follow up, no clinical or radiographic progression of the lesions was detected. There was a higher complete retention of GI (98.5%) than resin (86.3%) sealants (p=0.0087).

Conclusions. GI and resin sealants seems successful in arresting micro-cavitated carious lesions in children. Longer follow-up is necessary to reach more definitive conclusions.
DIAGNOdent 2095® Undergraduate Students InVitro Reproducibility.
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Objective: To determine undergraduate dental students inter-intra examiner reproducibility in permanent molars and premolars primary occlusal carious lesions.

Methods: Cross-sectional study in 27 human extracted permanent molars and premolars, stored in physiological saline. 5 points/areas of each occlusal surface were measured by ten undergraduate students using Dd, following the manufacturer’s instructions. Intra-examiner reproducibility was determined performing 5 measurements on 5 randomly selected teeth, 4 months later. Each value was transferred to an Excel spreadsheet (Microsoft Office, 2010). Shapiro Wilk test was used to assess normal data distribution. Interexaminer reproducibility was determined using Kruskal-Wallis test, intraexaminer reproducibility was assessed using Wilcoxon signed-rank test, finally inter - intraexaminer Intraclass Correlation Coefficient (ICC) was calculated (Stata Data Analysis and Statistical Software 13.1®).

Results: 1350 measurements were obtained. No significant differences were found between evaluators at any point/area (interexaminer ICC 0.74). Four evaluators had no intraexaminer reproducibility, while Intra-examiner ICC values of the remaining six evaluators ranged between 0.62 - 0.88.

Conclusions: Good interexaminer reproducibility was found, while good/excellent intra-examiner reproducibility was found in 60% of students.

Cytokines as biomarkers in irreversible symptomatic pulpitis
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AIM: Measure and compare the levels of Interleukin (IL) 1-beta and 6 obtained from human exudate pulpar of teeth diagnosed with irreversible symptomatic pulpitis and normal pulp.

METHODOLOGY: Exudate was obtained from pulp exposure sites using paper points. 21 samples were obtained from teeth diagnosed with normal pulp and 43 from irreversible symptomatic pulpitis teeth. Cytokines levels were determinate by high sensitive enzyme-linked immunoabsorbent assay (ELISA). Data were statistically analyzed using test Wilcoxon rank-sum.

RESULTS: Significantly high levels (P=0,01) of IL-6 were detected in pulpal exudates from irreversible symptomatic pulpitis teeth as compared to normal pulp teeth. Levels of IL-1beta were higher in pulpal exudates from irreversible symptomatic pulpitis teeth as compared to normal pulp teeth, with no significant difference (P=0,06).

CONCLUSION: IL-6 could be a potential biomarker for determining the pulpal inflammation from teeth with irreversible symptomatic pulpitis diagnosis. Future studies are required to evaluate a broader panel of cytokines.
Proteomic analysis of pellicle on human enamel, bovine and resin

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Objective: This study aimed to compare the proteomic profile acquired pellicle (AP) formed in situ on human enamel, bovine enamel or composite resin using the Bauru in situ pellicle model – BISPM.

Methodology: One hundred and sixty two samples of human enamel, bovine enamel and composite resin were prepared (4x4 mm). Nine subjects with good oral conditions wore a removable jaw appliance (BISPM) with 6 slabs of each substrate randomly allocated. After sonication of the slabs, the AP was formed during the morning, for 120 minutes and collected with electrode filter paper soaked in 3% citric acid. This procedure was repeated 2 more times to allow 3 collections of AP from each substrate. The pellicles collected were processed for analysis by LC-ESI-MS/MS. The obtained MS/MS spectra were searched against human protein database (SWISS-PROT). The proteomic data related to protein quantification were analyzed using the PLGS software.

Results: A total of 27 proteins were found in the APs collected from all the substrates. Among them 14 were exclusive from the different substrates and 6 proteins were common for all the 3 groups. Proteins typically found in the AP were identified, such as as Histatin-1, Ig alpha-1, Ig alpha 2, Lysozyme C, Statherin and Submaxillary gland androgen-regulated protein 3B. Proteins not previously described in the AP, with different functions in the organism such as metabolism, cell signaling, cell adhesion, cell division, transport, protein synthesis and degradation were also identified.

Conclusion: These results demonstrate that the proteins typically found in the AP appeared in the three groups, regardless the substrate, except Cystatin, which was identified only in AP collected from human enamel. The BISPM revealed to be a good device to be used in studies involving proteomic analysis of AP.

Modification of acquired pellicle with cystatins reduces initial enamel erosion.

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OBJECTIVE: Cystatin-B was identified as an acid-resistant protein in the acquired enamel pellicle; it could be included in oral products to protect against erosion. Recently, a cystatin derived from sugar cane (canecystatin-5) was cloned and recombinantly expressed. This study evaluated the effect of pellicle modification, by incorporation of cystatin-B or canecystatin-5, on the protection against initial enamel erosion in vitro.

METHODOLOGY: Seventy-five bovine enamel specimens (4x4 mm) were divided into 5 groups: 1) deionized water (control), 2) 0.5% mucin + 0.27% casein solution, 3) 0.025 µg/µL cystatin-B solution, 4) 0.025 µg/µL canecystatin5 solution, and 5) 0.025 µg/µL canecystatin-5 solution applied before the formation of the acquired pellicle. Stimulated saliva was collected from three volunteers and used to form an acquired enamel pellicle on the specimens for 2h. Specimens (groups 1-4) were exposed to the protein solutions with stirring at 30°C for 2h. For group 5, blocks were exposed to canecystatin5 solution before the pellicle was formed. All specimens were then incubated in 0.65% citric acid (pH 3.4) for 1 min at 30°C. Treatment was done once/day for 3 days. Surface hardness was analyzed at baseline and after days 1 and 3 and percentage of surface hardness change (%SHC) was calculated. RESULTS: Data were analyzed by ANOVA and Tukey’s test (p<0.05). At day 1, treatment with cystatin B (35.1±9.9%) and canecystatin-5 (35.2±6.6%) before pellicle formation significantly reduced % SHC compared with control (46.9±6.7%). At day 3, all treatments with cystatins (54.5±8.6, 55.5±10.7 and 53.1±9.3% for cystatin-B, canecystatin-5 and canecystatin-5 before pellicle formation, respectively) significantly reduced % SHC compared with control (67.6±9.4%). In addition, treatment with canecystatin-5 before pellicle formation significantly reduced % SHC compared with the combination mucin/casein (64.4±9.4%)

CONCLUSION: These results demonstrate that canecystatin-5 seems to be a good candidate to be added to oral products to protect against erosion.
Prevalence and severity of fluorosis in schoolchildren in Santiago Province.

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OBJECTIVE: To characterize the prevalence and severity of dental fluorosis in schoolchildren aged 6 to 12 years of age in the Santiago Province.

METHOD: 851 schoolchildren aged 6 to 12 years old, from 3 communes of the Santiago Province of Chile were examined by two investigators (Kappa= 0.93). Clinical examination was recorded using Thylstup and Fejerskov (TF) and DMFT/dmft indexes. Fluorosis distribution according to sex, age and socioeconomic status (SES) of the school were determined. Data was analyzed with Kruskal-Wallis and Mann-Whitney tests (SPSS software) with a confidence interval of 95%.

RESULTS: The prevalence of dental fluorosis was 57.6% (n= 490). According to severity, a 23.6% of the sample was TF= 1, 20.2% TF= 2, 11.28% TF= 3, 1.41% TF= 4, 0.82% TF= 5 and 0.24% TF= 6 (highest severity reported). Men showed a prevalence of 56.2% while women 58.5%, with no significant difference between them (p= 0.51). The greater severity degree was detected at 12 years (p=0.01). A fluorosis prevalence of 40.4% was detected in stratum I (highest SES), 69.2% in stratum II, and 63.8% in stratum III, with significant differences between strata I - II, and I - III (p< 0.01). Subjects with fluorosis showed scores of 0.45 in DMFT and 1.31 dmft indexes, subjects without fluorosis showed scores of 0.49 in DMFT and 1.58 dmft, with significant difference between both dmft indexes (p= 0.014).

CONCLUSIONS: The prevalence of dental fluorosis in schoolchildren aged 6 to 12 years old in the Santiago Province is high, reaching a 57.6%, with greater severity at 12 years old. The highest socioeconomic stratum has the lowest prevalence. Schoolchildren with fluorosis have lower caries history than those without fluorosis.

Promotion program in school fourth grade of the Higuera, 2016

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OBJECTIVE: To compare the level of knowledge of students in the fourth year basic oral health pre and post educational program.

METHODS: A study group intervention was performed and the level of knowledge they had school before and after the implementation of the educational program was evaluated. Seventy four children between 9 and 10 years of age studying fourth basic year represented the study population. We interviewed 74 students who attended the day the investigation was initiated. Before starting the program they were given an evaluation to see the level of knowledge that the students had basic room and further evaluation to see the impact of the program performed.

The educational program was implemented in three theoretical practical sessions 45 minutes each. The topics covered were tooth decay and oral hygiene in the first session, the second session the topic of healthy eating was treated last session the issue of dentoalveolar trauma was treated.

RESULTS: Of the 74 students who were administered the assessment at the beginning of the program, 14% of students passed the assessment, once the intervention finished he turned to apply the same assessment and obtained that 66% of students passed the assessment. When comparing the average level of knowledge before and after, statistically significant difference (p = 0.001).

CONCLUSION: It is necessary to implement and strengthen educational programs for school children in order to improve their quality of life, promote self-care, prevention of oral diseases and changing habits.
Antiproliferative activity of Malva sylvestris on several cancer cell lines

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**Objective:** Nature has been a source of medicinal products for centuries, yielding many useful drugs Malva sylvestris commonly known as mallow, has reported a long history of recognition for its potent anti-inflammatory, antioxidant, anticancer and antiulcerogenic properties. Thus, the aim of this study was to investigate the potential antiproliferative activity of M. sylvestris extract and fractions.

**Methods:** M. sylvestris leaves were identified (ESA voucher #121403) before maceration extraction technique. Total growth inhibition (TGI) was chosen to assay the antiproliferative activity of M. sylvestris extract (MSE) and the fractions: hexanic (HF), chloroform (CLF), ethyl acetate (EAF) and aqueous (AF). The human keratinocyte cell line HaCaT, murine normal fibroblast (3T3) and eight human tumor cell lines [glioma (U251), melanoma (UACC-62), breast (MCF-7), multidrug resistant ovarian (NCI-ADR/RES), kidney (786-0), lung, non-small cells (NCI-H460), prostate (PC-3), and ovarian (OVCAR-03)] were investigated in this study. Data was determined by the concentration-response curve for each cell line obtained by non-linear regression analysis using the software Origin 8.0 (USA).

**Results:** It was demonstrated a strong antiproliferative activity for the chloroform fraction on several cell lines. The IC50 unveil biology activity against: U251 (32,0 µg/mL), NCI-ADR/RES (53,9 µg/mL), 786-0 (30,5 µg/mL), NCI-H460 74,3 (µg/mL); PC-3 de 27,6 (µg/mL); OVCAR-03 (32,6 µg/mL); HT29 (78,5 µg/mL), HaCat (36,7 µg/mL). The positive control was doxorubicin p<0.05.

**Conclusion:** Malva sylvestris and its chloroform fraction demonstrated a promising antiproliferative activity and due to its biological activity may be considered as a promising candidate for drug discovery.

Prevalence of color vision deficiency among dental students

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**OBJECTIVE:** Establish the prevalence of color vision deficiency among dental students of Pontificia Universidad Católica de Chile.

**METHOD:** A total of 268 students, including 71 males and 197 females between ages 18-21 years were examined for color vision deficiency (CVD) at the dental school of Pontificia Universidad Católica de Chile. The CVD was tested using Ishihara’s Charts (Plates) under day light conditions at normal reading distance. The students participated in the study after signing an informed consent. A questionnaire was sent to all the dental schools of Chile, asking if they take a CVD test to their students.

**RESULTS:** Participant’s colour vision was tested using Ishihara’s Charts (Plates). Among 71 boys, 4 were colour deficient (5,4 %). Among 197 girls, 1 was colour deficient (0,5 %). The questionnaire showed that none of the dental schools in Chile take a CVD test for their students.

**CONCLUSION:** The prevalence of CVD among dental students of Pontificia Universidad Católica de Chile was similar that found in other studies. None of the dental schools in Chile take a CVD test for their students.
Self-medication for toothache and relationship with socioeconomic-educational level.
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METHOD: 248 individuals older than 18 years who had at least once Toothache and that met all inclusion and exclusion criteria of the research. These were subjected to a survey guided by a monitor, in order to gather information about personal data, socioeconomic and educational level and their behavior towards the tooth pain. The results were tabulated in Excel and analyzed in SPSS 12.0.

RESULTS: 89% said to have self-medicated at least 1 time after suffering toothache. There is significant association between socioeconomic and educational level and conduct against the toothache of the population (p-value = 0.039), where the drug self-medication is practiced by medium high socioeconomic and educational strata with 50%, the low average level takes pharmacological and traditional self-medication, the high level shows a preference 48% to undergo dental care before self-medicating. According to gender preference observed in female undergoing dental treatment, while the male prefers to medicate the advice of a health professional. The population shows a lack of information on indications and contraindications of medicines they take against toothache, expressing the effectiveness of these for pain relief. The drugs most used for pain with 83% were NSAIDs, particularly sodium Metamizole with 35%, and traditional medicine most often used was clove (26%).

CONCLUSIONS: It was determined that when submitting Toothache, decisions or behaviors performed depend on the socioeconomic and educational level affected, showing a significant association between the two variables. Self-medication showed a significant prevalence in the face of pain behaviors, so it is important to educate and inform people about consequences of indiscriminate use of drugs.

Validation of a questionnaire about research in health students.
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OBJETIVE: To translate in Spanish, adapt and validate a questionnaire that assesses the knowledge and perception of students about biomedical research.

METHOD: This validation is based on the questionnaire developed by Memarpour et al. (1). We translated and cross-culturally adapted the original questionnaire to be use in Spanish. Experts in research methodology analyzed and corrected in form and content aspects of the questionnaire. This new document was subjected to a qualitative assessment until it is established that there is a semantic and conceptual understanding. The document obtained was applied face to face to 3 groups of dentistry students; 2nd, 3rd and 6th year. Total score for each student was calculated by the sum of all items of the questionnaire. Internal consistency was assessed by Cronbach’s alfa; discriminant validity was assessed by ANOVA comparing total score of the 3 groups; and test-retest reliability was assessed by linear regression.

RESULTS: A total of 184 completed questionnaires’ were received from dentistry students. We found Cronbach’s alpha coefficients between 0.741 and 0.822 for the different groups. Those groups shown significant differences (p<0.005) on total scores. Finally, test-retest reliability shown an significant fit to the linear function in the 3 groups (p<0.005).

CONCLUSIONS: The questionnaire has a good internal consistency, good discriminant validity for different groups and good test-retest reliability. Therefore, the measuring instrument is valid.
Caries experience and treatment needs amongst schoolchildren of Santiago Province.

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OBJECTIVE: To characterize caries experience and treatment needs in a population of schoolchildren of 6 to 12 years old in the Santiago Province.

METHOD: 1062 schoolchildren aged 6 to 12 years old, from 3 communes of the Santiago Province of Chile were examined by two investigators. Clinical examination was recorded using DMFT/dmft (WHO), the treatment need was estimated according to the examiners criteria. The data were tabulated and analyzed by calculating relative frequency percentage and analyzed with Mann-Whitney test, considering p<0,05 (Software SPSS v11).

RESULTS: The prevalence of caries-free children was 42.34% (caries prevalence was 57.66%). Caries-free prevalence in 6-year-old children was 60.6% and in 12-year-old children was 35.21%. DMFT in girls and boys was 0.54 and 0.56 respectively, with no significant difference (p=0.53). In contrast, dmft was 1.32 in girls and 1.80 in boys with significant difference (p=0.01). According to socioeconomic status, the dmft score was lower in high (p=0.017) and medium (p=0.021) socioeconomic status than in low socioeconomic status. The most prevalent treatment needs were two-surface restoration and one-surface restoration.

CONCLUSIONS: Caries prevalence was high (57.66%) in the studied sample. Restorations of two and one surface were the most common treatment need in the sample.

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Prevalence and severity of MIH in schoolchildren from Santiago Province.

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OBJECTIVE: Determinate the prevalence and severity of molar incisor hypomineralization (MIH) in schoolchildren aged 6-12 years of Santiago Province.

METHOD: Two calibrated dentists examined 851 schoolchildren aged 6-12 years old. The first permanent molars and permanent incisors were assessed for MIH according to the European Academy of Pediatric Dentistry, and its severity was assessed following Mathu-Muju and Wright criteria. Data was collected with a form specially designed for this study. Data was analyzed with chi-square and Kruskal Wallis test (SPSS software) with a confidence interval of 95%.

RESULTS: The prevalence of MIH was 12.7% (n=108). There was no statistically significant difference in prevalence related to gender (11.31% female, 14.79% male, p=0,135). The severity of MIH varied from mild (42.59%), moderate (27.78%) to severe (29.63%). There was a positive association between low socioeconomic level and the presence of the pathology (p=0.011).

CONCLUSIONS: The prevalence of MIH is relatively high (12.7%), in agreement with other reports from South America. However, the severity was mild for most of the cases (42.59%). It is recommended to continue the research in this field to evaluate prevalence and severity of MIH in Chile.

The study was funded by Fonis Conicyt SA14ID0056. National Fund for Health Research, Ministry of Health, Chilean Government.
Cross-cultural adaptation of the Chilean version of the Early Childhood Oral Health Impact Scale (ECOHIS)

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Objetives: To carry out the translation and crosscultural adaptation of Early Childhood Oral Health Impact Scale (ECOHIS) for the Chilean Spanish language.

Methods: The ECOHIS is an English-language measure, which assesses negative impact of oral health on quality of life among preschoolers. It relies on parental ratings of 13 items grouped into two scales, Child Impact and Family Impact Section. The forward and back-translation method by bilingual translators, with expert panel and cognitive debriefing were carried out. First Chilean Spanish version was reviewed panel expert composed by pediatric dentist and translators to identify inadequate expressions. After to back-translation the equivalence with the original version was evaluated by an expert panel who rated the items as: A (conceptually and linguistically equivalent), B (functionally equivalent, but with grammatical differences), or C (equivalence is not obvious). In addition each translator scored the difficulty in finding the conceptual equivalence in translation of each of the items from 1 (least difficulty) to 10 (maximum difficulty). Finally the cognitive debriefing was carried out in 15 preschoolers.

Results: The average difficulty for the translation of the items into Spanish was from 2, 5 in 4 of them been the rest equal or minor to 2. Regarding to the retrotraduction, the average difficulty was of 7, 5 for the item 13, the average weighting on item 8 was 6 and the rest was minor or equal to 5, 5. Comprehension and equivalence was equal or superior to 7 in every item. Two items were considered like equivalence doubtful (15,38%) and 11 were considered type A. The cognitive debriefing showed that the instructions, items and response choice were easy to understand for parents.

Conclusions: Adaptation process suggest that the Spanish version of the ECOHIS is comprehensible to patients and equivalent to the original version. Further studies are needed to assess its psychometric properties.

Pilot study. educational material in caries prevention, culturally relevant

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OBJECTIVE: To evaluate the effectiveness of the education materials for caries prevention, designed with culturally relevant (biological, cultural and social diversity) for different age groups (children ages 6 to 8 and their parents, adolescents from 10 to 12, adults ages 35 to 54 and older adults) users of the Center for Dental Clinics, University of Talca, 2015.

METHODOLOGY: Pilot study (community trial). A total of 150 patients (n=30 for each age group, in the group of children also worked with their parents). Previous information was determined by questionnaire (four items: social determinants, health belief, caries prevention knowledge and preference of educational material), with this information, educational material was designed and used (individual educational sessions) with emphasis on concepts and beliefs in caries prevention. Two weeks after education the questionnaire was applied again. McNemar test was used to measure change in level of knowledge (statistical significance was set at a p-value<0.05), NVIVO10 program was used to determine matching frequency responses health beliefs. The study protocol was approved by the Bioethics Committee of the University of Talca.

RESULTS: In all age groups the video was the educational material of choice. After the intervention, there were significant increases in categorizing the level of knowledge in caries prevention from “poor to good” in all groups. Reported change in beliefs about severity, consequences and benefits in caries prevention.

CONCLUSION: Educational materials designed culturally relevant to users of the Center for Dental Clinics of the University of Talca, 2015, are effective in increasing knowledge and changing beliefs about caries prevention.
Practices associated with dental pain in urban-vulnerable patients

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OBJECTIVE: To describe the influence of sociocultural context on the undervaluation of oral health in relation to cultural practices to face dental pain in patients living in vulnerable urban areas and beneficiaries of a Family Healthcare Center-Carlos Trupp, Talca, 2015.

METHOD: Sociocultural epidemiological study and qualitative exploratory design. Were applied 24 in-depth interviews in an intentional sample of men and women attending the dental services. The study was organized in field phases: exploratory, data collection and triangulation. The information from the interviews was analyzed based on Grounded Theory. In the analysis process relevant data was broken down into different units of meaning. It was triangulated by the investigator.

RESULTS: Empirical evidence reveals a undervaluation of oral health. Although dental pain is considered severe, the sociocultural context influences its naturalization. The main findings are: a) Toothache, a phenomenon of incomparable intensity that impacts the quality of life. 2) Socio-cultural context hinders access to dental care. 3) Information on oral health is seen as a promoter of self-care. 4) Individuals receive inadequate information about oral health care in primary health care center. 5) Oral diseases and absence of self-care are naturalized. 6) Low perceived severity of dental pain and oral diseases. 7) Aesthetic vision of oral health.

CONCLUSION: The association between dental pain and oral health practices is a multifactorial process. It is derived from the culture and closely interrelated. Access to dental care is limited in containing toothache. This contribute to the underestimation of dental pain and oral diseases.

Clinical consequences of MIH in schoolchildren from Santiago Province

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Objective: The aim of this study was to determine the clinical consequences of MIH in a population of schoolchildren of 6 to 12 years old in the Santiago Province.

Method: This study was observational, analytic and cross-sectional. 851 schoolchildren between 6-12 y/o from the Santiago Province were examined by two calibrated examiners. With informed consent from their parents, the schoolchildren were examined, and the European Academy of Paediatric Dentistry (EAPD) diagnostic criteria was used for MIH detection. Caries history was assessed with the DMFT/dmft score according to WHO criteria. Data was collected with a form specially designed for this study. Data was analyzed with T-test for Individual Samples and Bonferroni post-hoc (p<0.05).

Results: In the MIH-affected schoolchildren the mean DMFT score was 0.91 (±1.21) and mean dmft score was 1.98 (±2.48), which were greater than the scores in the non-MIH affected schoolchildren (mean DMFT score 0.41 (±0.95) and mean dmft 1.34 (±2.15)). The difference between DMFT scores in the two groups was statistically significant (p<0.000), as well as dmft score (p=0.002).

Conclusions: Schoolchildren of Santiago Province of 6-12 y/o diagnosed with MIH presented higher DMFT/dmft scores compared to schoolchildren not affected with MIH.

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Psycological profile of patients in intracoronary v/s extracoronary bleaching

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OBJECTIVE: To compare the personality profiles of those patients who ask for intracoronary dental bleaching V/S those patients who go for extracoronary bleaching of maxillary teeth, through the personality survey NEO Five-Factor Inventory (NEO-FFI).

METHODS: 71 patients out of those who went for dental bleaching to the operatory clinic FOUCH were selected and classified into G1= Patiens who require unitary intracoronary bleaching (n=45) and G2= Patiens that go for extracoronary conventional bleaching (n=26). Inclusion criteria: to be above 18 years old, to have an endodontical treated tooth that had a change of its color in some of the upper anterior teeth (G1) and aesthetic compromise due to dental color in upper anterior teeth (G2).Those patients whose cosmetic problem was not solved through bleaching were excluded. Each patient went through a survey (NEO Five-Factor Inventory NEO-FFI) before starting the treatment, to value their psychological profiles based on their score in every one of the big five personality traits: Neuroticism(N), extraversion(E), openness(O), agreeableness(A) and conscientiousness(C). The results were analysed by the student’s T-test to determine if the two group’s data were significantly different.

RESULTS: Mean sumatory score: G1= 143.71±15.1 and G2= 140.96±14.7. There were not statisticaly significant differences between both groups (p=0.458). Mean Neuroticism G1= 16.51±7.7 and G2= 16.65±7.6. Mean Extraversion G1= 32.67±6.3 and G2= 32.12±6.0. Mean Openness G1= 29.76±7.8 and G2= 28.85±6.3. Mean Agreeableness G1= 31.80±6.3 and G2= 30.31±5.9. Mean Conscientiousness G1= 32.98±6.7 and G2= 33.04±5.546. No statisticaly significant differences (p>0.05) were found between G1 and G2 in any of the five traits categories.

CONCLUSIONS: Differences between the psychological profiles among the patients in these two groups weren’t found. There’s not a particular pattern related to each one based on the big five personality traits model.

Medical liability and ways of the penal process now days. Fiscalia Metropolitana Sur, Santiago, Chile, 2016

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OBJECTIVES Cuantify the complaints by medical liability on Fiscalia Metropolitana Sur (FMS)and their resolution. Define Lex Artis and how we use it on the medic practice. Define why a complain can or cannot end on a trial and a sentence. Define the attorney’s role and his performance on a complaint by medic responsibility.

METHOD The data was collected on the FMS, on the Treatment of less complex cause Department, were are remited the medic responsibility complaintments for the last year, thanks to the transparency law. We protect all the personal data of the complainants by the private life protection law 19.628 and rights and duty law 20.584. Also, we search on the annual data publish on the public Ministery web. We calculated all the complaints for medical liability on medic profesionals, medic and dentists, defined on 492 article of the penal code by 2014-2015. And, of all of them we evaluated the dentists.

RESULTS On the last period (2014- 2015), 24 complaints against medics were registred on de FMS, of them, on 8 they found medical liability. 33% of the complaints are processed, and only a 2% goes to trial.

CONCLUSIONS The complaints for medical liability have increased by the last 10 years, but, by the application of the Lex Artis, 66% of them have been dismissed. Also, each district attorney have ways to dismissed complaints when there are too many. So of all the complaints, only a few goes to trial and have a sentence.
Dental anxiety and oral health literacy in Chilean pregnant women

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OBJECTIVE: Relate dental anxiety (DA) and oral health literacy (OHL) with socio-demographic factors in chilean pregnant women attending to Family Health Centers in the metropolitan region.

METHOD: A transversal, correlational study. The sample consisted in 73 pregnant women (18-40 years), from two Family Health Centers of the urban area of Santiago who came to dental check ups. Dental Anxiety Scale IDAF 4C+ and OHLA-S scale of oral health literacy were applied, in addition to collecting information about age, educational level, number of weeks of pregnancy, marital status, occupation and income. Descriptive statistics and Pearson and Spearman test to assess association were used. We worked with a margin error of 5%.

RESULTS: 15.3% of the sample presented dental phobia, while 18.1% had moderate DA and 66.7% had mild DA. The mean of literacy was 17.9 (SD: 4.27). There was a positive association between DA and OHL, and between OHL with age and educational level. There are no associations between DA and sociodemographic variables evaluated. Finally, there was no difference in DA and OHL when women were in their first pregnancy.

CONCLUSIONS: There is a positive association between DA and OHL, the last one is independently associated with age and educational level, while there is no relationship between dental anxiety and sociodemographic factors.

Social impact of early childhood caries in the Maule region

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OBJECTIVE: To determine the social impact of early childhood caries (ECC) in children under the age of 5 in Maule Region, using the validated Early Childhood Oral Health Impact Scale (ECOHIS; Spanish version).

METHODS: Cross-sectional study in 144 children (3-to-5 years old) and their parents (convenience sample) was carried out in different communities in Maule Region. Caries (dmft), malocclusions (MO) and history of dental trauma (DT) were assessed by a single examiner (Kappa 0.927; 0.762 and 1.0 respectively). ECOHIS score was recorded beside sociodemographic information (socioeconomic status; SES, caregivers education and rurality). ECOHIS reliability was measured by estimating internal consistency (Cronbach’s alpha) and temporal stability by test-retest (Rho). ECOHIS was related to some sociodemographic variables. Statistical differences between ECOHIS scores and presence/absence of MOI and DT were assessed. Correlation of ECOHIS with dmft index was carried out by measuring construct validity and parallel factor analysis.

RESULTS: ECC prevalence was 43.8% (dmft 2.17) which increases with age but not significative (p=0.069). Children from lower SES, less educated caregivers and from rural areas had more caries (p=0.027, p=0.004, p=0.005, respectively). ECOHIS presented an acceptable internal consistency, temporal stability, high reliability and it was related to dental caries. ECOHIS showed ECC had great impact on children quality of life relates to tooth/jaw/mouth pain and parent feeling of guilty about dental problems of their children. DT but not MO increases the ECOHI values.

CONCLUSIONS: ECC impact severely children under de age of 5 and their parents in the Maule Region. ECOHIS (Spanish version) is a valid instrument to be used in Chilean population that warrants further investigations.
Early-Childhood Caries prevalence in 2 and 4 years-old. Algarrobo, Chile.

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PURPOSE: The aim of this study was to determinate the prevalence of early childhood caries (ECC) in children of 2 (N2) and 4 (N4) year-old in the city of Algarrobo, using the cee-d index and comparing them with National data.

METHOD: Cross sectional descriptive study. The data was obtained from de Monthly Statistics Register (REM) from CESFAM Algarrobo, Posta El Yeco, Posta San Jose and Dental Clinic of JUNAEB in the city of Algarrobo. This study was performed in 204 children of group N2 and N4, evaluated for 4 Dentist from the same Service. Calculation was performed taking into account the total number of patients of 2 and 4 years with registration at entry to the establishment and the total number of patients admitted to treatment. This study was authorized from CESFAM Algarrobo service.

RESULTS: A total of 204 children aged 2 and 4 years old were evaluated. A total of 94 children and 110 belong to N2 to N4, 14.9% and 54.6% N2 and N4 respectively, they had at least one (1) value in the cee-d index. When comparing prevalence of caries of the city of Algarrobo with national data, there was a lower prevalence of ECC (14.9% v/s 16.8%) and in N4, there was a higher prevalence of ECC (56.4% v/s 49.6%).

CONCLUSIONS: It is possible to determine that Algarrobo, compared to the national level, presents more patients free of tooth decay in N2, but not in N4. Based on this, it is not possible to determine reasons for the higher prevalence of ECC in N4. It is necessary to compare these data with previous years to assess the behavior of the community in both age groups.

The psychosocial impact of dental aesthetics in patients undergoing in-office bleaching.

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OBJECTIVE: To evaluate the psychosocial impact of dental aesthetics in patients that undergo in office bleaching with low concentration of Hydrogen Peroxide at 12 month follow-up.

METHODS: 31 patients older than 18 years, of both genders, who were subjected to tooth bleaching, were evaluated. The PIDAQ questionnaire was applied to measure the psychosocial impact of dental aesthetics in 5 times (prior to bleaching, in the week after treatment, one month, nine months and twelve months later). After, the data were compared by Wilcoxon test.

RESULTS: The results show that there is statistically significant difference between measuring the psychosocial impact of aesthetics prior to bleaching versus the post-evaluation in the areas of self-confidence (p = 0.000), psychological and social impacts (p = 0.006). A month after treatment, statistically significant differences are also observed in the self-confidence and psychological impact (p = 0.023) but there was no statically difference in social impact (p = 0.161). Again, at 9 and 12 months post-bleaching there is statistically significant differences compare with the result before treatment in these two areas (p = 0.001), but the social impact did not have statically difference (p = 0.069).

CONCLUSIONS: There is a significant difference in the psychosocial impact of dental aesthetics in patients undergoing teeth whitening by comparing the baseline time and one year follow-up. Positive changes can be seen in terms of self-confidence and psychological discomfort that lasts over time. The positive changes in the social area are temporary and last until one month after treatment.
Aesthetics self-perception in-office bleaching at one year follow-up

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OBJECTIVE: To evaluate the changes in self-perception of dental aesthetics in patients undergoing bleaching teeth in-office with low concentration of Hydrogen Peroxide (HP) at 12 month follow-up.

METHODS: 31 patients older than 18 years, of both gender, who were subjected to tooth bleaching were evaluated. The OHIP14-Aesthetic questionnaire was applied to measure the self-perception of dental aesthetics in 5 times (prior to bleaching, in the week after treatment, one month, nine months and twelve months later). After the data were compared by Wilcoxon test.

RESULTS: The results show that there is statistically significant difference between measuring the perception of aesthetics prior to bleaching versus the post-evaluation (p = 0.006). A month after treatment, statistically significant differences are observed (p = 0.023). Also at 9 and 12 months post-bleaching there is statistically significant differences compare with the result before treatment (p =0.009).

CONCLUSIONS: There is a significant differences in the perception of aesthetics in patients undergoing teeth whitening by comparing the baseline time and one year follow-up. Positive changes can be seen in terms of psychological discomfort and functional limitations at 12 months of follow-up.

Changes in the orofacial esthetic self-perception post in-office bleaching at twelve months

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OBJECTIVE: To evaluate the changes in the orofacial esthetic self-perception in patients undergoing bleaching teeth in-office with low concentration of PH at 12 month follow-up.

METHODS: 31 patients older than 18 years, of both genders, who were subjected to tooth bleaching, were evaluated. The OES questionnaire was applied to measure the self-perception of dental aesthetics in 5 times (prior to bleaching, in the week after treatment, one month, nine months and twelve months later). Later the data were compared by Wilcoxon test.

RESULTS: The results show that there is statistically significant difference between measuring the perception of orofacial esthetics prior to bleaching versus the post-evaluation at twelve months (p = 0.001). The most statistically significant difference is in the area of dental esthetic (p= 0.002), follow by the face esthetic item (p= 0.008).

CONCLUSIONS: There is a significant difference in the perception of the orofacial esthetics in patients undergoing teeth whitening by comparing the baseline time and one year after the treatment. Positive changes can be seen in terms of dental and facial esthetic at 12 months later.
OBJECTIVE: Analyze the accumulated caries damage of 2-year old children admitted in the center of family health (CESFAM) Alberto Bachelet in the commune of Conchalí, during year 2015.

METHOD: This was an observational, descriptive, cross-sectional and quantitative approach study. The North Metropolitan Health Service database was used, and the data of the CESFAM Alberto Bachelet’s monthly statistic registration from year 2015 was consolidated.

RESULTS: From a total of 3,004 admissions to general dentistry registered during 2015, 6.1% belonged to 2-year old children. From those, an 87.7% were registered as caries free and a 12.3% with caries history. Within the children with caries history, a 63.6% showed a DMFT between 1 and 2.

CONCLUSIONS: Even when the caries free 2-year old children percentage surpasses the national mean, a non-insignificant part presents a DMFT index compatible with early childhood caries diagnosis. It is required more thorough studies to determine the need to implement prior preventive controls.

OBJECTIVE: Identify the affected areas of oral health with more impact in life quality, in Mas Sonrisas beneficiary program patients attended in CESFAM Alberto Bachelet in year 2015.

METHOD: Observational, descriptive, cross-sectional and quantitative approach study. Complete oral health impact profile questionnaire was applied and analyzed in a group of patients benefit from Mas Sonrisas program attended in CESFAM Alberto Bachelet in year 2015.

RESULTS: A 100% of the surveyed population declared to be affected in the “functional limitation”, “physical pain” and “psychological discomfort” areas. The 89.5% declared affected the “psychological disability” area, 78.9% manifested “physical disability” and the 63.2% stated to be affected in the areas “social disability” and “handicap”. The most affected areas were “psychological disability”, “physical pain” and “functional limitation”; patients declared to be troubled from dental issues in more than half of the questions for those areas. Patients over 40 years showed more positive answers than those under 40 in all areas, specially in “handicap”, “social disability”, “physical disability” and “psychological disability”, first two were more than double in over 40 years patients.

CONCLUSIONS: Dental diseases can affect quality of life of those who suffer them. Psychological, physical and functional aspects can be affected in presence of dental problems. It could be a relationship between age and affection/trouble degree in diminished quality of life brought by dental diseases.
Cardiovascular risk factors in professionals of CESFAM Alberto Bachelet.

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OBJECTIVE: Determine the prevalence of some risk factors for cardiovascular diseases (CVDs) in professionals of the Family Health Care Center (CESFAM) Alberto Bachelet in 2016.

METHOD: Observational, descriptive, cross-sectional and quantitative approach study. An anonymous questionnaire was performed to professionals of CESFAM Alberto Bachelet in the commune of Conchalí, Santiago; containing items for smoking and physical activity habits, age, height and weight. Data were collected. Tabulation and acquisition of central tendency measures and percentages were done using Microsoft® Excel® software.

RESULTS: 80% of the professional employees of CESFAM Alberto Bachelet were surveyed. With a population including doctors, dentists, midwives, nutritionists, kinesiologists, nurses and social assistants; 86.1% were female. According to the World Health Organization (WHO) classification, a 40% showed some degree of obesity, were 22.9% had class I obesity, 14.3% class II and 2.9% class III. Only the 25.7% stated to be smoker, but they did not declare morbid cardiovascular records (MCR) neither were they classified as obese. 75% were sedentary (exercise less than 3 times a week for 30 minutes); from those, 36% did not exercise at least once a week during the last month. Only a 20% stated MCR, all of them were sedentary and an 85.7% had overweight with a high frequency of insulin resistance.

CONCLUSIONS: Obesity and sedentarism, two of the principal factors for CVDs and responsible for a great amount of deaths worldwide according to the WHO, are highly prevalent in professional employees of CESFAM Alberto Bachelet, even though they play a fundamental role in educating population over prevention of said conditions. Regarding this, it is suggested to investigate the impact on adherence to the recommendations of health care given by professionals that do not apply to themselves.

Aesthetics self-perception post in-office bleaching by OHIP-14

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OBJECTIVE: To evaluate the changes in self-perception of dental aesthetics in patients undergoing bleaching teeth in-office at month follow-up.

METHODS: 20 patients older than 18 years, of both genders, who were subjected to tooth bleaching with dental tone A3 or higher in scale Vita Classical determined by the spectrophotometer Vita Easy Shade. The OHIP14-Aesthetic questionnaire was applied to measure the self-perception of dental aesthetics in 3 times: prior to bleaching (PB), in the week after treatment (1W) and one month later (1M). The questionnaire consists of 14 questions related to cosmetic dentistry divided into seven domains: 1:functional limitation, 2:physical pain, 3:psychological discomfort, 4:physical disability, 5:psychological disability, 6:social disability and 7:handicap. The patient should respond how often a particular problem has occurred on a scale with 5 options (and their scores): very often (4), quite often (3) sometimes (2) rarely (1) never or can not (0). The scores of the 14 responses are summed, yielding values between 0 and 56 points. For comparisons between groups, the Wilcoxon test (α= 0.05) was used.

RESULTS: The OHIP-14 median scores were: PB 31.2±14.02, 1W 23.25±9.04 and 1M 20.9±7.86. Significant differences were observed PB/1W (p=0.002), PB/1M (p=0.001), 1W/1M (p=0.025). After a week the domains 2, 4, 5 and 6 decreased (p≤0.049) and after a month all domains except 2 and 3 decreased (p≤0.016).

CONCLUSIONS: Dental bleaching produces an improvement in aesthetic self-perception after a month follow-up, affecting most domains evaluated.
Association between daily oral hygiene protocols and characteristics of ELEAMs

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OBJECTIVE: To describe and associate the existence of oral hygiene protocols (OHP) in long term care facilities for elderly with characteristics of the establishment and their Technical Directors (TD) in Chile.

METHODS: We used the public register of the long term care facilities and ad-hoc on-line self-application questionnaire. This tool aimed to obtain information on knowledge of TD related to dental issues, characteristics of the facilities, years of experience working for elderly, oral care protocol and training on oral health. The convenience sample consisted of 42 participants.

RESULTS: 61.9% of TD are women, 85.7% have training in care for elderly, most are nurses (30.95%). 76.2% of long term care facilities offer daily oral care (hygiene) for institutionalized elderly. Two features of the TD and 3 of the facilities were significantly associated with the existence of protocols. Private facilities, with > 30 residents and those sharing the provision of oral hygiene instruments with residents are more likely to have OHP.

CONCLUSIONS: Private long term care facilities for elderly, with > 30 residents where their TD knows the current regulation on daily oral hygiene, and institutions sharing the provision of oral hygiene instrument with residents are more likely to have daily oral hygiene protocols.

Caries assessment in 6-year old children, Conchalí 2015.

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OBJECTIVE: Determine the severity of damage produced by caries in 6-year old children attending family center of health care (CESFAM) in the commune of Conchalí; and to determine the percentages of 6-year old children with and without caries history through the DMFT index.

METHOD: Observational, descriptive, cross-sectional and quantitative approach study. The North Metropolitan Health Service database was used, and the data of the CESFAM Alberto Bachelet’s monthly statistic registration from year 2015 was consolidated.

RESULTS: Out of 1.758 admissions to general dentistry, 392 were 6-year old children. A 35.3% of the children were caries free, meaning a DMFT index of 0; while 63.6% had caries damage. Out of the damage population 21.2% had a DMFT index from 1 to 2; 19.9% from 3 to 4; 13.6% from 5 to 6; 4.8% from 7 to 8 and 4% over 9.

CONCLUSIONS: More than a third of the 6-year old children having dental treatment in Conchalí during 2015 were caries free. Considering the Department of Statistics and Health Information’s last report, 6-year old children’s DMFT index has not only decrease, but the amount of caries free children has surpassed favorably the national statistics (over 60%) and is 7% over the sanitary goal proposed for ages 2011-2020. Nevertheless, 22.5% of these children were severely damaged by caries.
Effect of upper lip compression in pain perception during local maxillary anesthesia. A cross-over clinical trial.

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OBJECTIVE: The aim of this study was to evaluate the effect of pressure on the upper lip by placing a wooden clothes peg in decreasing pain perception before an infiltrative maxillary anesthetic injection.

METHODS: A cross-over clinical trial was designed. Thirty-five volunteers dental students (mean age 20.1 ± 2 years; 51.8% male) of Universidad Austral de Chile Dental School (Valdivia, Chile) were participated. They given of 0.6 ml of 2% lidocainewith 1:100,000 epinephrine (SeptodontTM) by randomized two punctions at buccal vestibule apex level of lateral incisor with standard speed were administered. In a hemi-arch a local anesthesia with use of instrument compression (wooden pegclothes) in upper lip was administered; and after one week a local anestesia without compression was administered. In bothtimes, the level of intensity pain perceived during injection was registered and compared by visual analog scale (VAS) of 100 mm (t-test p <0.05)

RESULTS: The average perceived pain with or without compression of the upper lip was 27.6 ± 14.5 mm and 36.9 ± 17.6 mm respectively (p = 0.0008).

CONCLUSION: Upper lip compression had significantly less pain perception compared with without compression during the maxillary infiltration technique.

L-PRF: Promising for Use in Regenerative Dentistry?

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OBJECTIVE: Clinical effectiveness of Leukocyte and Platelet-Rich Fibrin (L-PRF) remains highly-debated due to preparation protocol variability, limited evidence-based clinical literature and/or inadequate understanding of its bio-components. This critical review provides an update on the clinical application of L-PRF during oral surgery procedures.

METHOD: A structured literature search for human Randomized Controlled Clinical Trials was performed on PUBMED (Oct. 2015 – June. 2016) resulting in 19/63 articles. Five articles were excluded due to quality/availability and lack of randomization.

RESULTS: Periodontal defects (N=5): Addition of L-PRF to conventional open flap procedure significantly improved clinical and radiographic parameters as well as patient acceptance. Probing-depth (PD) reduction and clinical-attachment (CAL) gain values were superior to those previously-reported in meta-analysis for open-flap surgery alone. Grade II furcation defects (N=1): Complete clinical-closure of the defect was achieved in 66.7% of L-PRF-treated sites. Severity within residual defects was reduced in 5/6 sites. Significantly greater PD reduction, CAL gain, radiographic vertical defect and gingival stability were noticed. Miller's I & II gingival recessions (N=5): When compared with current gold-standard technique (sub-connective tissue-graft), faster healing and fewer complications (pain/discomfort) were noticed with L-PRF use. Sinus-floor augmentation (N=2): L-PRF appeared to be a safe, simple to use/handle, cost-effective alternative to traditional bone grafts and absorbable membranes. Alveolar Ridge Preservation (N=2): Results indicate L-PRF may have clinical benefits for alveolar ridge preservation. Significantly improved post-extraction soft tissue healing and reduced early post-surgical pain were also observed following L-PRF use.

CONCLUSIONS: L-PRF application is associated with early bone formation and maturation; accelerated soft-tissue healing; and reduced post-surgical pain and discomfort. While preparation protocols require revision and standardization, L-PRF may be considered a simple, malleable, safe and cost-effective biomaterial alternative for use in oral surgery. Analysis of rheological properties, bio-components and their bioactive function would enhance the validity, comprehension and therapeutic potential of the reported findings; a currently ongoing research topic of interest at BioMAT’X.
Salivary Gland Radioprotection in Head and Neck Cancer: A Step Closer to Clinical Translation.

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OBJECTIVE: Salivary gland damage caused by irradiation induces serious side effects including hyposalivation and xerostomia which can deteriorate quality of life. This study aims to evaluate the radioprotective effect of a novel nano-sized protein therapy locally administered into salivary glands prior to irradiation.

METHOD: External irradiation at dose with 15 Gy was exposed to neck fields of C57BL/6 mice. We directly administered core-shell nanocapsules loaded with the protein cocktail into the salivary glands of the experimental group 8 hours before radiation and PBS was injected into the glands, likewise, for the controls. Salivary flow rates and salivary protein excretion were evaluated using an enzyme-linked immunosorbent assay (ELISA) over a 3 months period following treatment. Histological evaluation of structures and analysis of apoptosis and proliferation were also performed.

RESULTS: The experimental group showed increased salivary flow rates compared to the sham group. Indeed, protein content analyzed by ELISA was comparable to that of pre-radiation (base-line) level. Histological evaluation revealed that acinar cells showed less vacuoles and nuclear aberrance in experimental group compared to the control group and the amount of mucin stained by alcian blue was larger, in the latter. Protein therapy resulted in less apoptotic activities detected by TUNEL assay and similar proliferative indices as in un-irradiated mice.

CONCLUSIONS: Our findings suggest that the local delivery of nanocapsules loaded with a protein cocktail into the salivary gland of mice provides a radioprotective effect against radiation-induced salivary gland damage via reducing apoptosis and promoting the proliferation of salivary gland cells.

Life quality in orthognathic surgery patients. Preliminary results.

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OBJECTIVE: To evaluate life quality in orthognathic surgery patients before the procedure.

METHOD: Cross-sectional study. Thirty patients participated (mean age 25 years, 50% male) who underwent orthognathic surgery in three Chinese hospitals from Santiago, Valdivia and Temuco between January and June of 2016. Each patient answered two questionnaires in Spanish to register quality of life and general health prior to surgery: World Health Organization quality of life Bref (WHOQOL-BREF) and General Health Questionnaire (GHQ 28). These instruments were taken two weeks before and will be applied three months after orthognathic surgery.

RESULTS: The WHOQOL-BREF questionnaire indicated “moderate” quality of life in all the domains (Physical health; 65.3, Psychological health; 53.3, Social relationships; 50.9, Environment; 62.8). In the GHQ 28 questionnaire, normal scores were observed in all the domains (Somatic Symptoms; 0.66 , Social dysfunction; 1.04, Anxiety symptoms; 0.59, Depression symptoms; 0.28).

CONCLUSIONS: A small trend to low scores in the domains “Social relationships” and “Social dysfunction” is observed. It is required, that patients answer the instruments three months after surgery, to evaluate the differences with the actual results and the possible improvement in the quality of life of this patients.
Applications of rhBMP-2 in Cleft-palatine Surgery.

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**Objective:** To determine rhBMP-2 applications in Cleft Palatine Surgery.

**Method:** Systematic review of the literature between 2009 and 2016, PubMed, EMBASE, LILACS, using the MeSH terms / EMTREE: bone morphogenetic protein 2 maxillofacial abnormalities, Cleft Palatine surgery, in full text format.

**Results:** 30 articles about the rhBMP-2 use in cleft palatine surgeries were found. It is described that rhBMP-2 as an osseous inductor potential equal to the iliac crest graft (Goldstandar) for this type surgeries, rhBMP-2 three months after surgery seems to have same qualities than the natural grafted bones. This material contributes less pain post-surgery compared to others biomaterials as graft in palatine cleft. A low rate of graftsloss rhBMP-2 has reported compared to other types of grafts. However it is an area even by study. Has been reported that the use of rhBMP-2 along with other biomaterials such as collagen membranes improve its performance. The work-time of this biomaterial is relatively short (25 minutes) contributing to a better experience of the surgeons through its use. The rhBMP-2 access is directly related to its value and the fact that is not possible to get in all the countries.

**Conclusion:** rhBMP-2 is the only biomaterial that ensures the bone in formation as similar quality to the natural bone. It seems to be in an alternative of the use of other type bone graft, improving post-surgery process, although its use is limited due to the high cost and to the surgeon expertise required.

Analysis of tooth angulations in subjects with FDC-II, using CBCT.

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**Objective:** To determine the anteroposterior angulations of the upper front teeth (central and lateral incisors) in relation to the palatal plane through Cone-beam computed tomography (CBCT) in subjects with facial deformity class II (FDC-II).

**Method:** These pilot studies have 12 patients with FDC-II were evaluated. Informed consent was signed. EZ-plus 3D software was used to perform measurement from sagittal plane, Palatal plane (PP) was determined tracing a line from anterior nasal spine to the posterior nasal spine. Then a tangent was traces passing through the mass middle point of the evaluated tooth in order to determine its angulations related to PP. Data was transferred to an Excel Spreadsheets and then analyzed with SPSS statistical software, version 19.

**Results:** The Left lateral incisor (LLI) angulation was 69.8°(±7.0) the left central incisor (LCI) was 69.3° (±6.7), the right central incisor (RCI) was 68.3° (±6.2) and the Right lateral incisor (RLI) was 72.7° (±5.8). Teeth were split into 4 groups in order to compare the angulation degreeGroup 4 angulation of right lateral incisor compared to left lateral incisor showed the most statistical significance (p=0.059). The other three groups (RCI-LCI, LLI-LCI, RCI-RLI) shown to have similar angulation (p<0.05).

**Conclusion:** In this pilot study was found that the anterior superior teeth angulation was similar in the studied groups excepting the left and right lateral incisors.
**Akinosi-Vazirani technique and craniocephalic biotype: a preliminar study**

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**OBJECTIVE:** To relate puncture depth (PD) and effectiveness of Akinosi-Vazirani anesthetic technique (A-VTech) with craniofacial biotype and the tragus-ala nasi distance (TAn).

**METHOD:** 29 adult patients from Dentistry Department, Universidad de Antofagasta, under informed consent were included for this study. PP was established in mesocephalic patients as 29 mm according to a previous experience and literature search. Cephalic index was calculated using an anthropometer and patients put under categories as mesocephalic, braquicephalic and dolicocephalic. Then cephalic length (LC) and TAn distance were used to generate a constant called K, result of a mathematical relation K=PP/LC and K', result of K'=PP/TAn with the information obtained from mesocephalic patients. With this K value a PP adapted to dolicocephalic and braquicephalic patients was established using the formula (PP=K·LC). The A-VTech was administrated using long needle with a rubber band and PP adjusted to the cephalic biotype of each patient. The anesthetic effect was measured by asking the patient, soft tissue pricking and dental percussion. The K' constant was related to K for its further evaluation.

**RESULTS:** Mean values were for mesocephalic (n=10) LC=19.5cm, TAn=9.85cm; For dolicocephalic (n=10) LC=19.8cm, TAn=9.88 and for braquicephalic (n=9) LC=18.8cm, TAn=9.54cm. Effectiveness of the technique after 5 minutes was 100% for dolicocephalic with PP>29mm and braquicephalic with PP<29mm. No relation was observed between the values of K and K’.

**CONCLUSIONS:** Anesthetic effect was observed with the A-VTech adjusting the punction depth according to patient's cephalic biotype considering the K constant. The K’ value was not related with the K value, and remains unclear its application as an alternative constant in this protocol.

**Evaluation of Antibiotic Prophylaxis in Patients undergoing Third Molar Removal**

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**OBJEIVTE:** The use of antibiotic prophylaxis in third molar removal (TMR) is a current dental practice to prevent postoperative complications. Regardless, it is unknown the ideal situation for quantifying serum and wound levels after antibiotics administration. The purpose of this study is to quantify serum and tissue blood levels of amoxicillin from dental patients undergoing TMR using High-Performance Liquid Chromatography (HPLC) technique.

**METHODS:** A clinical trial involving 23 patients (21.3 ± 3.9 years old; 12 women and 11 men) was conducted. Preoperative doses of 2 g amoxicillin were administered orally one hour before the TMR. The blood samples were obtained from two sources, serum and wound, in a total volume of 1.5 mL for each volunteer. Antibiotic concentrations were quantified by using HPLC technique. The method was validated for linearity, selectivity and limit of detection. Statistical analysis was performed using STATA (version 10.0) with a significance level fixed at 5%.

**RESULTS:** The average of amoxicillin concentrations in wound (1.2 ± 1.8 μg/mL, range 0.5-6.3) were inferior (p< 0.001) compared to those from the serum (4.1 ± 2.2 μg/mL, range 0.9-7.5). No correlations were observed between the body mass index and antibiotics serum/wound concentrations (p > 0.05).

**CONCLUSION:** The prophylactic dose of 2 g amoxicillin one hour before TMR is considered enough to reach the minimum inhibitory concentration against oral pathogenic bacteria.

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Remodeling of mouse mandibular condyle evoked by masseter muscle paralysis

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OBJECTIVE: To determine the effect of masseter muscle paralysis on the subchondral bone of mandibular condyle in a mouse model.

METHOD: We conducted a pilot study of masseter muscle paralysis in mice by using botulinum toxin Type A (BoNTA). Adult BALB/c mice (7 weeks) were used (n = 6) as both, experimental and control group: Right masseter was intramuscular (IM) injected with 0.2 U of BoNTA (BOTOX®, Allergan) and the left masseter was IM injected with vehicle. Animals were euthanized 14 days after single injection, and selected tissues were dissected. Hematoxylin and Eosin (H&E) staining and immunofluorescence (Cav3) were used to determine masseter muscle fiber diameter. Histomorphometric analysis was implemented for subchondral bone of right and left mandibular condyles evaluation.

RESULTS: A significant reduction in masseter muscle volume and in single masseter fibers diameter was observed in BoNTA injected muscles. Also, a significant decrease of subchondral bone width, as well as an increase in medullary cavities, were found after 14 days of masseter muscle paralysis in the experimental side versus control.

CONCLUSIONS: With this pilot study we have validated our mouse model of masseter muscle paralysis as a suitable approach to study the effects of this condition on mandibular condyle of BALB/c mice.

TMD Patients And Female Athletes Present Similar Pain Modulation

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Objective: To evaluate and compare deep pain sensitivity and conditioned pain modulation in highly trained female athletes and non-athletes women with myofascial pain.

Methods: A case-control study was performed. 10 women with muscle pain (DC / TMD) and 13 highly trained female athletes were evaluated. Masseter, Temporalis and forearm muscle (Flexor Carpi Radialis) pressure pain threshold (PPT) and pressure pain tolerance (PPTol) and VAS were measured at baseline and after a conditioning stimuli. Cold water arm immersion was used as a noxious stimuli to calculate CPM. Data were analyzed using SPSS v.20 chi2 tests, test T, Fisher exact, U de Mann-Whitney, Kruskal Wallis.

Results: PPT were similar for athletes and TMD patients in most analyzed muscles. Left temporal muscle had a lower threshold (P = 0.02); PPTol was higher for athletes (P <.05). CPM was similar between groups. (P> .05) presenting similar modulating abilities.

Conclusion: Women Athletes and TMD Women have similar biological skills to modulate pain, but athletes are more tolerant to pressure pain. Psychosocial capacities should be incluede to analyze Athletes Pain behavior.
Sexual Dimorphism of the anterior pillar of the face

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Objective: Delaire’s Arquitectural and Structural craniofacial analysis is commonly used in planning and treatment of facial dysmorphosis with corrective surgery. According to this analysis, adult men and women have different normal values for the anterior maxillary pillar angle of the face, formed between this skeletal structure and the anterior base of the skull, and being smaller in women than in men. This work aims to test the hypothesis that there is no sexual dimorphism in this variable.

Method: Tracings and measurements were carried out over lateral teleradiographies of 47 patients (25 females, 22 males), who satisfied inclusion criteria such as finished growth, no previous orthopedic, orthodontic or surgical treatment; and the anterior maxillary pillar angle of the face was determined according to Delaire’s method. Both group mean values were compared statistically using the T-test of Student.

Results: The mean values obtained for both groups showed no significant statistical difference (p:0.841), so the nonexistence of sexual dimorphism hypothesis was accepted.

Conclusion: Our results suggest to check over the theoretical measurement of the anterior pillar angle of the face during surgical planning of facial dysmorphosis based on Delaire’s analysis.

Oral Health Representations Amongst Elderly

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Purpose: to determine dimensions involving oral health amongst elderly.

Methods: The study design was a qualitative one. From 2005 to 2015, 546 partially edentulous prosthetic users patients sought preventive treatments at five public and private dental care centers from Santiago’s metropolitan area. Patients were referred for preventive treatments to six Prosthodontists (Kappa 0.76) through mutual references. Patients in compliance with Periodontal Support Therapy were analyzed. Focus Group strategy out looking for dimension of oral care was utilized in-groups of five to six patients gather because of friendship at “Tea Time” in private homes and just one dentist invited by the group was present on each one.

Results: The cohort was composed of 31 men and 73 women (mean age 82.35 from 80 to 91). All patients were self-caring independent ones and had tertiary educational level. Content analysis from Focus Group strategy saturated three mayor dimensions preventing good oral health indexes: Motor, Social and Psychological. Some indicators of the Motor dimension were: degenerative diseases as degenerative osteoarthritis, Parkinson’s disease and Lupus. Some indicators of the Social dimensions were family content and lack of privacy. Some indications of psychological dimension were modesty, embarrassment and shyness. When encourage to give a hierarchy amongst dimensions 83% (n= 79) of the informants’ highlighted the psychological dimension as the most relevant dimension preventing correct oral health representation.

Conclusions: For the study sample, psychological dimension is the most relevant dimension in preventing good oral health representations.
Cleft And Lip Palate Incidence: Study of 244 cases.

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Objective: Determine the incidence of cleft lip and palate in patients born between 1995- 2012 and currently treated in the orthodontic service of Luis Calvo Mackenna Hospital, in Santiago de Chile.

Method: 244 clinical charts were analyzed. They were classified by type, affected side, association to syndrome, gender and year of birth. These clefts can be classified based on the tissue that is compromised, which is known as Anatomical Classification (Cauvi Leon & Leiva Villagra 2004) The information was processed and statistically analyzed using frequency calculation techniques, means, and Chi-squared analysis using the Systat 13 program.

Results: It was determined that the unilateral cleft lip palate was more common, the left side was most affected, 12% was associated to syndrome and was higher in men.

Conclusion: The results are consistent with the literature. The association to syndrome was the only variable that turned moderately lower than what is described.

Caries Epidemiological Profile from Pontifical Catholic University student’s health department.

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OBJECTIVE: To assess demographically and by study programs the DMFT caries index from a population of old young adults obtained of patients from student’s health department al Pontifical Catholic University of Chile.

METHOD: General information regarding gender, age, study program on course and residence area in Santiago was obtained from clinical charts data registered from patients attending the student’s health department of Pontifical Catholic University. The decayed, missing and filled teeth (DMFT) index was used to determine the prevalence of caries among these characteristics.

RESULTS: A total of 296 patients were enrolled in this descriptive analysis. The mean age was 23.77 years (SD 3.2) being women the ones who consult the most with a 54.7%. The main reason for first consult was control. Of the participants, 37.1% came from orient residence area. Mean DMFT was of 4.7, on which northern areas of the city show the highest level. The percentage of caries-free students was of 56.8%, with no significant differences when compared among groups.

CONCLUSION: Results obtained showed similar patterns as the ones delivered by Chilean Ministry of Health presented as females the ones who consults the most and higher DMFT in lower socioeconomic status measured by area of residence, this because areas from north, occident and south Santiago showed higher DMFT than Orient Santiago which is a higher socioeconomic area.
Periodontal condition in teenagers from Santiago, Chile

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OBJECTIVES: Determinate periodontal condition in teenagers from Santiago, characterizing by age, gender and type of school they attend.

METHODS: A secondary analysis was performed with data from periodontal examination records made by calibrate operators, of 332 teenagers between 15 and 19 years old, from Santiago-Chile from the "Multicentric study of insertion loss in southern cone teenagers". To estimate PC it was used probing depth (PD) and bleeding on probing (BOP) recorded on index teeth. Defining 4 PC, according to PSR: Healthy (PSR 0=PD \leq 3mm), Gingivitis (PSR 1=PS \leq 3mm + SS), Need for higher periodontal assesment (NHPA) (PSR 3=PS 4 -5 mm) and need for derivation (ND) (PSR 4 = PS>5mm). There were calculated prevalence and difference by gender, age and type of school.

RESULTS: 31,9% of the teenagers presented healty PC, 40,7% gingivitis, 26,2% and 1,2% NHPA and ND respectively. NHPA+ND was 27,4%, been higher between 15-17 years old (30,7%) versus 18-19 (22,1%), about women(27,8%) and men (27,0%) there were no significant differences. Those attending state schools shown more prevalence or NHPA+ND (47,4%) tan privates (21,3%). 19 years old teenagers were 43,0 with healty PC versus 23,9% at 17 years old. Sextants (S) more affected by PSR3 and PSR4, were S6 (12,9%) and S4 (12,7%) ande the less S2 (3,6%) and S5 (2,7%).

CONCLUSIONS: In teenagers attending schools of Santiago-Chile is prevalent the periodontal condition of gingivitas. 27,4% requires greater periodontal valuation to determinate diagnosis. Been higher the need between 15 – 17 years old and state schools attending. The routine use of PSR it is important to detemine need of treatment and early diagnosis of periodontal disease in teenagers.

Oral Health Related-Quality of Life of Schoolchildren with Molar Incisor Hypomineralization

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OBJECTIVE: To compare the perception of oral health-related quality of life of schoolchildren from 8 to 12 years old affected with Molar Incisor Hypomineralization (MIH) and schoolchildren not affected by MIH.

METHODS: A sample of 746 schoolchildren aged 8 - 12 years old completed the questionnaires: Child Oral Health Quality of Life (COHQoL) 8-10 and COHQoL11-14, according to their age at the moment. Two calibrated examiners (kappa=0.93) performed intraoral clinical examination; the diagnosis of MIH was made according to the European Academy of Paediatric Dentistry criteria. Data were analysed and the perception of quality of life was assessed separated by the domains of the questionnaires (perception, oral symptoms, functional limitations, emotional and social well-being). Data were analysed using Mann-Whitney test.

RESULTS: From the 746 schoolchildren assessed 608 COHQoL questionnaires were completed (362 girls and 246 boys). Mean COHQoL8-10 score was 7 and 6 (for MIH affected and non-MIH affected groups respectively), mean COHQoL11-12 was 12 and 13 (for MIH affected and non-MIH affected groups respectively). There were no significant differences in the perception of oral health-related quality of life of schoolchildren with and without HIM in any of the domains assessed.

CONCLUSIONS: The presence of MIH did not affect the schoolchildren's oral health-related quality of life measured with (COHQoL) 8-10 and COHQoL11-14 questionnaire.

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Factors Associated with Root Caries Activity in Community-Dwelling Elders

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Objective: Despite the increasing prevalence of root caries lesions, few studies have examined its association with salivary flow, socio-demographic variables, and in particular, with active lesions. The aim of this study was to associate root caries and their activity with salivary flow and socio-demographic variables in community-dwelling elders.

Methods: The present cross-sectional study considered 345 elderly participants who participate in a RCT of non-invasive therapies for root caries with at least 5 teeth present and one root caries lesion. Subjects were interviewed to fill a sociodemographic survey, orally examined and donated a sample of unstimulated and stimulated salivary flow. Clinical exams were performed to assess prevalence and activity of root caries using ICDAS criteria for root caries. The Root Caries Index (RCI) and percentage of Active Root Caries (ARC) were calculated and associated with salivary flow and socio-demographic variables. Data were analyzed using the Student t test, ANOVA and Kruskal Wallis, with a significance level of 5%.

Results: The RCI was 52.1% and the ARC 31.7%. Salivary flow was lower in women and in subjects with high drug consumption and systemic diseases (p<0.05). Although neither RCI nor the percentage of ARC differed in relation with unstimulated salivary flow, they were slightly higher in people with normal stimulated salivary flow (p<0.05). Both RCI and ACR were associated with higher educational level (p=0.0001 and p=0.006, respectively). When the group of subjects was divided into two age groups, older than 70 years showed higher ACR, but not RCI than 60-69 year-old older adults (p=0.01).

Conclusion: Salivary flow does not appear to be numerically associated with the prevalence or the activity of root caries in community-dwelling elders. Among the sociodemographic factors, educational level and age, but not sex and socioeconomic status, appear to be related with an increased presence and activity of root caries in older adults.

Overdentures assessment in total removable dentures

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OBJECTIVE: Research to the available evidency about root suport removable total dentures.

METHOD: A literatury review (in spanish, english and portuguese) according to the topic selected from 2005 until today, searched in EBSCO, MedLine, PubMed and Scielo, using the next keywords: “total removable overdenture”, “overdenture with natural teeth”, “advantage of overdentures”, “total removable dentures in elderly patients”, “Chilean Ministry of Health”, “elderly GES plan”. The selection criteria were base don people who have roots for prothesic, analyzing advantages and disadvantages, satisfaction rates and masticatory efficiency.

RESULTS: Roots left provide vertical support to the overdenture, decreasing the pressure on edentulous spaces and that, the alveolar bone resorption is prevented. All reviewed studies show that there is an increase overdentures stability of the removable denture and increased safety for use. There being also higher masticatory efficiency by the presence of dimensional stability and directional discrimination. Even less oral lesions due to best fit of the removable denture, giving more safety to the patient, and helping in psychosocial aspect.

CONCLUSIONS: Elderly patients with conventional dentures are particularly complain about the instability of the mandibular teeth, which increases the severity of bone resorption. Overdentures help to overcome many of the problems that have conventional removable dentures such as loss of progressive bone, poor stability and retention, loss of periodontal proprioception, directional sensitivity and dimensional discrimination, and low masticatory efficiency. Creating overdentures is a viable and useful alternative to comparing the total denture as possible avoid edentulous, providing an alternative to use the teeth that would be lost by extractions because they are not able to support fixed or removable partial dentures. Overdentures are still a viable option and an effective and less costly alternative to improve the quality of life of elderly patients, especially in the public health service.
Shaping ability of reciprocating systems: waveone, waveone gold, reciproc.

OBJETIVE: To determinate the shaping ability of reciprocating mechanical systems nickel-titanium: Waveone (WO), Waveone Gold (WOG) and RECIPROC (R) in mesial canals of first and second extracted human molars lower.

METHOD: 40 mesial roots of first and second mandibular molars extracted, divided into three experimental groups (WO, WOG and R) and a control group (Protaper Universal (PTU)) were used. The samples were radiographed and cut transversely by radicular thirds (coronal third, middle and apical). Subsequently evaluated: the type of instrument; centricity / root canal transport and non-instrumented areas. Photo Scape, Image J., Infostat and ANOVA test for data analysis: the programs were used.

RESULTS: The study found that by forming the ducts with files WO and WOG have fewer tendencies to transport Vestibular-Lingual (V-L), in the coronal, medium and apical third. In mesiodistal (M-D) direction, determined that less apical transportation was with, files WOG and PTU, however, in both cases, not statistically significant differences (p> 0.05) is determined. The average displacement of transport in the ducts indicated a trend towards vestibular and mesial. The percentage of non-instrumented area was higher in R (15.8%) and lowest in WO (7.3%) was not statistically significant (p> 0.05).

CONCLUSIONS: The instrument have greater centrality and percentage of area instrumented was WOG and WO, with not statistically significant difference. But, we can say that all files systems are safe and the clinic is to do the choice of instrument according to the clinical case.

Fiber posts adhesion to weakened roots reinforced with different materials

OBJETIVE: To compare the bond strength (BS) of fiberglass post to flared root canals reinforced with different materials.

METHOD: The roots of 48 premolars were endodontically treated. After one week, the root canals were prepared in order to simulate an oversized root canal, except for the positive control group (PCG), which was cemented with a prefabricated fiber post (PFP) compatible with the root canal size, simulating an ideal adaptation. In the other oversized root canals (n=8/group), alternative restorative techniques for filling root canals were tested: negative control group (NCG [PFP with a smaller diameter than of the root canal]), composite resin group – CRG, bulk-fill group – BFG, self-adhesive cement group – SAG and glass ionomer group – GIG. The posts were cemented and after 1-week, each root was sectioned transversely into six 1-mm thick discs and the push-out test was carried out to evaluate the BS. The data were analyzed by two-way repeated measures ANOVA and Tukey's tests (α=0.05).

RESULTS: The highest BS value was observed for the PCG. The NCG and the GIG showed the lowest BS values. Root reinforcement with conventional and bulk-fill composite resins showed the highest BS values; however, the bulk-fill resin was the only one able to maintain the high BS values in all regions of the root canal. The self-adhesive cement showed intermediate results between CRG and GIG.

CONCLUSIONS: Root reinforcement with bulk-fill composite resin should be the first option for the treatment of flared root canals before cementation of a prefabricated fiber post.
Effects of chlorhexidine on dentin adhesion

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Objective: to analyze the effects of chlorhexidine (CHX) on hybrid zone and resin tags morphology and dentin proteoglycans staining.

Method: 30 human premolars extracted by orthodontic reasons were used. The occlusal enamel and superficial dentine were removed by using a slow-speed diamond saw. In 24 specimens a 2% CHX solution was applied for 60 sec. with a brush on to the acid-etched dentine. The solution excess was removed through a filter paper, leaving the dentin surface moist. The surfaces were bonded with Adper Single Bond 2 adhesive (3M). As control in 3 specimens CHX was omitted. As positive control, 0,5% polyethyleneimine was used in 3 specimens. Teeth were processed for histological analysis and in tissue sections proteoglycan histochemistry and immunohistochemistry with CS-56 monoclonal antibody were performed.

Results: CHX reduces the proteoglycan histochemical stainability. The hybrid zone was irregular and resin tags were short and pleomorphic. Adhesive and cohesive failures were detected in all specimens. The intratubular proteoglycans were clumping blocking the adhesive penetration within etched dentinal tubules.

Conclusion: Pre-treatment of dentine surfaces with cationic CHX altered the normal morphology of hybrid zone and resin tags. These findings suggested that CHX eliminates the polyanionic nature of dentin proteoglycans and dentin matrix proteins required for tissue organization and interactions with adhesives.

Mechanical and biological properties of a resin containing 4,4’dimethylaminobenzylidrol

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OBJECTIVE: The aim of this study was to examine the effect of the alternative coinitiator 4,4’bis dimethylaminobenzylidrol (BZN) in degree of conversion (DC), mechanical and biological properties of experimental resin composites.

METHOD: The coinitiator BZN was used in three concentrations (0.2, 0.5 and 1.2), and the coinitiator DMAEMA was used as control at the same concentrations as above. The molar concentration of camphorquinone (CQ) and coinitiators was kept constant (1:1). The composites were manipulated and submitted to microhardness test (VHN), flexural and compressive strength (in MPa), elastic modulus (GPa), DC (FT-IR), in vitro cytotoxicity (against 3T3 fibroblastic cells) and in vitro evaluation of Candida albicans and Streptococcus mutans adhesion on the experimental resins. Data were subjected to one-way ANOVA and Tukey post-test (α = 0.05).

RESULTS: The results showed that the experimental composite resin with BZN showed higher DC values compared to control DMAEMA groups. For the mechanical properties, microhardness values were higher in BZN groups; flexural strength and elastic modulus were similar between all the groups. Compressive strength in group BZN0.5 was compared to its control DMAEMA0.5, with the lowest values attributed to the group BZN0.2. The experimental resins with BZN and DMAEMA were considered nontoxic against 3T3 fibroblasts. Also, the evaluation of Candida albicans and Streptococcus mutans adhesion revealed that BZN resins exhibited a high degree of inhibition compared to control resins with DMAEMA.

CONCLUSIONS: It was concluded that the inclusion of the coinitiator BZN provides antimicrobial potential to resin composites, without compromising DC and mechanical properties.
Effects of EDTA on the bond strength of Topseal® to Biodentine®.

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OBJECTIVES: To assess, in vitro, if 17% EDTA increases the bond strength between Topseal® and BD® and the type of adhesive failure with and without chelator.

METHODS: In vitro experimental study. 20 grooves were carved in acrylic blocks and filled with BD®. Half of them (n = 10) were exposed to 17% EDTA during 60 seconds, washed with 10 ml of saline and dried with absorbent paper. The other group (n = 10) were not exposed to EDTA. All samples were stored during 12 minutes at 37°C in moisture conditions. Then, all specimens were covered with a film of Topseal® and stored at 37°C during 8 hours in moisture conditions. After that, the samples were subjected to the scratch test, which allows to evaluate the bond strength of the Topseal® to BD® in Newton (N). Adhesive failures modes were visualized with optical microscopy with 5x magnification and scanning electron microscope (SEM) equipped with dispersive spectroscopy X-ray.

RESULTS: BD®-Topseal® without EDTA showed a bond strength average value of 60 N/mm and BD®-Topseal® with EDTA 33,45 N/mm. EDTA decreased the bond strength between BD® and Topseal® with significant differences (p>0.05). Cohesive failure was detected in both groups.

CONCLUSIONS: The use of 17% EDTA as irrigation would not be appropriate when BD® is present in root canal.

Characterization and In-vitro evaluation of an experimental Micro-particulate Bioglass for treatment of cervical dentinal hypersensitivity.

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OBJECTIVE: Physico-chemical characterization of experimental microparticulated bioglass powders with different compositions, and their effect in dentin permeability reduction.

METHOD: The bioglass powder formulation: 2Na₂O.1CaO.3SiO₂-6%(wt%)P₂O₅ (BV1) and their different compositions, 2Na₂O.1CaO.3SiO₂-6%(wt%)P₂O₅-K₂O (BV2) and 2Na₂O.1CaO.3SiO₂-6%(wt%)P₂O₅-SrO (BV3) were prepared by melting. The commercial Bioglass® 45S5 (BV4) and Biosilicate® (BV5) were used as positive control. All bioactive glasses were characterized by spectroscopy. The dentin permeability reduction was evaluated on bovine dentine in 3 stages: minimum permeability, maximum permeability (after EDTA 24%) and final permeability (after exposure to biomaterial). The samples were stored in 24-well plates for 24 h at 37.5 oC in artificial saliva. They were subsequently divided in two groups: with and without simulated brushing. The data were submitted to appropriated statistical analysis (α=0.05).

RESULTS: All biomaterials were promoted dentin permeability reduction, however there was a significant difference considering the group factors (bioactive glasses) and treatment (with and without brushing simulated).

CONCLUSIONS: The physical and chemical test confirmed the presence of all the compounds in each of the biovidros. The results suggest that all experimental bioglasses show dentin permeability reduction.
Rodent subcutaneous tissue reactions to Biodentine®


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Objective: To analyze the effects of Biodentine® implantation on subcutaneous connective tissue.

Method: 18 adults male mongolian gerbils (Merionis unguiculatus) were used. Hardened blocks of Biodentine® (Septodont) were implanted by means a small skin incision in the dorsal and posterior subcutaneous tissue (n=9). In 3 specimens the biomaterial was implanted recently prepared. As control, Pro Root® MTA (Dentsply Maillefer) was used (n=6). After 7, 15 and 30 days, the animals were euthanized, and the tissues were processed for histological evaluation using Haematoxylin-Eosin (H&E) and Giemsa staining.

Results: Around hardened blocks of Biodentine® a granulomatous tissue composed by multinucleated giants cells and chronic inflammatory mononuclear cells were observed in all times analyzed. The epidermis and the panniculus carnosus muscle heal after 15 days post-implantation. When Biodentine® was implanted recently prepared, the material produces a foreign body tissue reaction in all times analyzed. The epidermis and panniculus carnosus muscle don’t repair and adipose tissue of hypodermis was chronically inflamed. Around MTA implants, the tissue reactions were similar, however in recently prepared MTA after 30 days post implantation the skin heals normally and a few multinucleated giants cells were observed.

Conclusion: When materials were implanted subcutaneously in a bulk form a controlled chronic inflammatory reaction was detected and the implants were not degraded in all times studied. When materials were used recently prepared, the macrophages and giant cells engulfed small particles of material producing a foreign body tissue response, which rejects biomaterials through dermis and epidermis.

Medical and microbiological properties and modeling of drug release from etch-and-rinse adhesives containing cooper nanoparticles

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Objectives. This study evaluated the effect of addition of copper nanoparticles at different concentrations into a simplified etch-and-rinse (ER) adhesive system on antimicrobial activity (AMA), degree of conversion (DC), ultimate tensile strength (UTS), 28-day cumulative water sorption (WS), solubility (SO) and copper release (CR).

Methods. Seven experimental adhesive systems were formulated according to the addition of copper nanoparticles (0 [control], 0.0075, 0.015, 0.06, 0.1, 0.5 and 1 wt%) in Ambar (AM) adhesive system. We tested the antimicrobial activity of experimental adhesives against Streptococcus mutans using agar diffusion assay. For DC, specimens were constructed and tested after 24 h by FTIR. For UTS, specimens were tested after 24 h and 28 days. For WS and SO, after specimens’ build-up, they were stored in water and measured for 28 days. For CR, specimens were stored in 2% nitric acid solution and the properties were measured for 28 days. The data were submitted to appropriate statistical analysis (a = 0.05).

Results. The addition of copper nanoparticles provided antimicrobial properties to the adhesives at all concentrations (p < 0.05), and did not influence UTS, DC, WS and SO (p > 0.05). Higher CR was observed in adhesives with higher concentration of copper nanoparticles (p < 0.05).

Conclusion. The addition of copper nanoparticles in concentrations up to 1 wt% in the simplified ER Ambar adhesive system may be an alternative to provide antimicrobial properties, without reducing adhesives’ mechanical properties evaluated.
Bond strength of endodontic sealer Topseal® to Biodentine®.

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INTRODUCTION: When Biodentine® (BD®) is used to repair root perforations or as a root end filling material it remains in contact to the endodontic sealer, to which must adhere properly in order to avoid infiltrations.

OBJECTIVES: To determine, in vitro, the bond strength and the type of adhesive failure of endodontic sealer Topseal® to BD®.

METHODOLOGY: Experimental study in vitro. 10 acrylic cut grooves were filled with BD® and stored for 12 minutes at 37 °C in moisture conditions. Then, the grooves were covered with a light Topseal® film. After 8 hours of setting, the bond strength between the Topseal® film to BD® was assessed in Newton (N) with the scratch test. The fracture mode was first observed with optical microscopy with 5x magnification and then with scanning electron microscope (SEM) equipped with dispersive spectroscopy X-ray.

RESULTS: When Topseal® was adhered to BD® presented an average value of bond strength of 60 N/mm. The type of adhesive failure observed was in all cases cohesive type.

CONCLUSIONS: Topseal® could be used when BD® has been used as a root end filling but taking in consideration the presence of cohesive failure type.

Effects of etch-and-rinse adhesives containing copper nanoparticles on the durability of resin–dentine interfaces

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Objectives. This study evaluated the effect of addition of copper nanoparticles at different concentrations into a simplified etch-and-rinse (ER) adhesive system on antimicrobial activity (AMA), knoop microhardness (KNH), in vitro degree of conversion (DC-d), degree of conversion within adhesive/hybrid layers (DC-i), as well as the immediate (IM) and 1-year (1Y) resin–dentine bond strength (μTBS) and nanoleakage (NL).

Methods. Seven experimental adhesive systems were formulated according to the addition of copper nanoparticles (0 [control], 0.0075, 0.015, 0.06, 0.1, 0.5 and 1 wt.% in Ambar adhesive system. We tested the AMA of experimental adhesives against Streptococcus mutans using agar diffusion assay. For KNH and DC-d, specimens were tested after 24 h. The occlusal enamel of thirty-five molars was removed and adhesives were applied to dentine surface after 37% phosphoric acid etching. After composite resin build-ups, specimens were longitudinally sectioned to obtain resin–dentine specimens (0.8 mm2). For μTBS e NL, specimens were tested in IM or 1Y. For DC-i, specimens were analyzed in IM. The data were submitted to appropriate statistical analysis (α = 0.05).

Results: The addition of copper nanoparticles provided antimicrobial properties to the adhesives at all concentrations, and did not influence negatively KNH. The addition of 1% of copper nanoparticles decreased the DC-d and DC-i significantly. After 1Y, significant reductions of μTBS and increases of NL were observed only in the control group.

Conclusions: The addition of copper nanoparticles in concentrations up to 0.5 wt.% in a simplified ER adhesive system may be an alternative to provide antimicrobial properties and increase the long-term stability of resin–dentine interfaces, without reducing adhesives’ mechanical properties evaluated.
Effect of nonvital tooth bleaching in the impact psychosocial

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OBJECTIVE: Evaluate the psychosocial impact of dental aesthetics of Nonvital Tooth Bleaching with two gels

METHODS: 49 patients who underwent Nonvital Tooth Bleaching using the “Walking Bleaching” technique, with hydrogen peroxide 35% (G1) and hydrogen carbamide de 37% (G2), completed the Spanish version of the questionnaire psychosocial impact of dental aesthetics (PIDAQ) before, one week after and one month after treatment. This questionnaire consists of 23 questions divided into four domains (self-confidence, social impact, psychological impact and aesthetic perception). The patient must answer each question on a scale from 1 (no impact on dental aesthetics) to 5 (maximum impact on dental aesthetics). The sum of the answers for each question determines the value obtained in the questionnaire. Results were compared in different times through the Wilcoxon test and between groups of study through Mann-Whitney test. (p<0.05)

RESULTS: The averages of the sumatory obtained in each evaluation were to G1: baseline 71; after week 63.5 (p=0.015 between baseline-week); after month 63.5 (p=0.003 between baseline-month). G2: baseline 66; after week 57 (p=0.018 between baseline-week); after month 58 (p=0.108 between baseline-month).

The difference between the study groups was not statistically significant.

The data domains were statistically significant; Self-confidence (p=0,000 between baseline-week and baseline-month), Social Impact (p=0,000 between baseline-week and baseline-month), Psychological Impact (p=0,000 between baseline-week; p=0,001 between baseline-month) and Aesthetic Perception (p=0,000 between baseline-week and baseline-month).

CONCLUSIONS: Nonvital Tooth Bleaching have a positive psychological impact on the patient after treatment in all domains evaluated (Self-confidence, Social Impact, Psychological Impact and Aesthetic Perception). There were no significant differences by use of gel of hydrogen peroxide 35% and hydrogen carbamide de 37%.

Action of Erosive Cycle in encapsulated Glass Ionomer Cements

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OBJECTIVE: evaluate in vitro the resistance of encapsulated glass ionomer cement of high viscosity (Riva Self Cure® e Equia Fil GC®), submitted in three different sequences of erosive cycles of brushing.

METHOD: The 40 samples has divided in groups of five, passed in erosive cycles, and alternated the liquid Coca-Cola/saliva once, three and five times a day. The control group submerged only in saliva. In the intervals between the tests, the samples remained in destilated water in 37° C. It was obtained weight, rugosity and hardness of the samples before and after the erosion/abrasion cycles.

RESULTS: When the loss of weight were evaluated, it was found a significant loss in the three erosive cycles with no significant differences between materials (p>0.05). In the rugosity test, it was verified a significant difference between the materials and the cycles, and the five times cycle content the higher rugosity, as well as occurred significant differences after the brushing (Turkey test , p< 0.05). The variance analyses of three factors to hardness verification showed a significant difference in the three times cycle (p>0,05). Riva Self Cure showed the best performance.

CONCLUSION: the erosive and abrasive cycles has determinate different alterations in rugosity and hardness in the encapsulated glass ionomer cements, where the high exposition and high values are involved.
6-month evaluation of clinical status of sealed composite restorations.
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OBJECTIVE: To observe the clinical quality of composite restorations sealed with pit and fissure resin-based sealant and flowable resin nanofilled according to FDI criteria for marginal adaptation, marginal staining and secondary caries, in an evaluation after 6 months of the treatments.

METHODS: In this study were used 50 composite restorations with marginal defects 3 or 4 according FDI criteria and analyzed by calibrated operators (kappa=0.85), from 20 patients with a range of 1-4 restorations for each one, which were randomized into 3 groups: A (n=18): Sealed with resin-based sealant (Clinpro Sealant, 3M ESPE) more adhesive (Universal scotchbond, 3M ESPE); B (n=18): Sealed with flowable resin composite (Filtek Flow Z350XT, 3M ESPE) more adhesive (Universal scotchbond, 3M ESPE); and C (n=14): no treatment. The treatments were performed under absolute isolation with the protocols specified by the manufacturer. Clinical evaluation was performed with two explorers: 150EX (Ø 0.15mm, Depppeler) and 250EX (Ø 0.25mm, Deppeler).

RESULTS: In the 6-month evaluation were examined 20 patients, 83,3% (15 restorations) of group A and 72% (13 restorations) of group B had an excellent clinical performance in marginal adaptation (FDI = 1). 27,8% (5 restorations) of group A, 22,2% (4 restorations) of group B and 57,14% (8 restorations) of group C were affected by marginal staining (FDI=2 and 3). 100% of restorations had absence of secondary caries (FDI = 1).

CONCLUSIONS: The sealed of composite restorations with flowable composite more adhesive and resin-based sealant more adhesive seem to be alternative treatments to replacement that enable a better clinical performance of restorations over 6 months. The behavior of the difference in marginal adaptation and marginal staining between the group A and B should be observed in long term. No secondary caries lesions adjacent to marginal defects in 6 months were observed.

Effect of application time/pH of metaphosphoric acid on enamel-resin interface.
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OBJECTIVE: To evaluated the effect of different pHs of 40% meta phosphoric acid (MPA) with a 37% ortho-phosphoric acid under different application times in terms of enamel microshear bond strength (μSBS) and enamel-etching pattern.

METHOD: Sixty molars were sectioned in four parts (buccal, lingual, and proximals) and randomly assigned into 12 experimental conditions according to the combination of the independent variables: Acid [37% gel of ortho-phosphoric acid (OPA), 40% gel of meta-phosphoric acid (MPA) in the following pHs – 0.5, 1 and 2] and Application Time [7, 15 and 30 seconds]. Composite resin cylinders were prepared. The samples were stored in water at 37°C/24 h) and tested in a universal testing machine (Kratsos) at 1.0 mm/min. Data (acid vs application time) were analyzed with two-way ANOVA and Tukey’s test (α=0.05). The enamel-etching pattern was evaluated under a field-emission scanning electron microscope.

RESULTS: The OPA and MPA pH 0.5 produced statistically higher and similar μTBS values when compared with MPA pH 1 and 2 independently of the application times (p < 0.001). The application of MPA resulted in exposure of the periphery of the prisms, with signs of hydroxyapatite dissolution. MPA 0.5 showed the partial dissolution of the prisms with an exposure of the subsurface enamel.

CONCLUSIONS: 40% meta-phosphoric acid with pH 0.5 produced the similar μSBS values and a enamel-resin interface than OPA.
Caries incidence in composite resin restorations with defective margins

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Purpose: To determine the incidence of secondary caries in patients with high cariogenic risk with defective restorations margins that have been sealed versus unsealed, in a time of 6 months control.

Method: This study recruited 31 patients with 3 restorations each (n = 31). The inclusion criteria used were a) Patients with a high cariogenic risk, which was assessed using the Cariogram program,b) Restorations with marginal adaptation according to FDI criteria: 3 and 4, selected by evaluators previously calibrated (Kappa> 0.8) using probes with 150 and 250 um (Deppeler, Switzerland).

The restorations were randomly assigned into one of three groups: 1) Sealed with sealant more adhesive resin (Filtek Z350 XT, 3M ESPE), 2) Sealed with fluid resin (Filtek Flow Z350XT, 3M ESPE) and 3) Control Group, no treatment.

The treatment was performed under absolute isolation, treating the defect area with orthophosphoric acid 35% for 15 seconds and washing for 30 seconds. The adhesive (Universal Single Bond) was rubbed for 20 seconds, then a gentle flow of air was applied and the material was applied with an instrument of calcium hydroxide (PICH, Hu Friedy Mfg. Co. Inc.) and photoactivated by 20 seconds (Curing Light 2500, 3M ESPE).

A week of being sealed were evaluated, obtaining criteria FDI 1 in marginal staining, secondary caries and marginal adaptation. After 6 months were evaluated again.

Results: It was diagnosed secondary caries (FDI criteria: 3) in one case of group 3 (3.23%), groups 1 and 2 had no cases of secondary caries.

Conclusions: At 6 months of control, the occurrence of secondary caries in high risk patients with defective restorations sealed margins is less than restorations in which no sealing was performed.

Influence of application and consistency mode of phosphoric acid on the bond strength for of glass fiber pins to the root canal

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OBJECTIVE: The aim of this study was to evaluate the effect of the consistency of acid conditioner at 37% applied in passive form or with sonic adhesion with glass fiber pins (Whitepost DC, FGM) using the bond resistance method (RU) for push-out and analysis of the fracture pattern.

METHOD: The roots of 28 premolars were prepared endodontically and divided into 4 groups (n=7) according to a combination of factors: acid consistency (liquid or gel) and the form of application (passive or sonic device). After applying the adhesive Adper Single Bond (3M ESPE) inside the conduits, the cementing was done with RelyX ARX (3M ESPE). Next, the roots were sectioned transversally into 6 pieces of approximately 1 mm and the push-out test carried out at a speed of 0.5 mm/min. The results were subjected to a variance analysis of three factors with repeated measurings and the Tukey test (alpha = 0.05).

RESULTS: Independently of other experimental conditions, higher values of RU (mean ± SD) were observed in the cervical third (13.7 ± 9.9) followed by the middle third (8.2 ± 2.6) and apical (4.1 ± 2.0). Passive application of phosphoric acid gel (15.6 ± 4.9) and active application of liquid acid (16.4 ± 4.3) showed the highest values of RU in the cervical third. In the middle thirds and apical, there was no significant difference between the techniques.

CONCLUSIONS: The application of liquid phosphoric acid has advantages for root anatomy, since it can be applied in passive form. However, more studies are still needed.
Levels of RANKL before and after intracoronal bleaching of non-vital teeth

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OBJECTIVE: Evaluate and compare levels of receptor activator of nuclear factor-kappa B ligand (RANKL) in gingival crevicular fluid before and after intracoronal bleaching using two different bleaching agents.

METHOD: 50 endodontically treated discolored teeth were included. Two study groups were randomly formed according to bleaching agent, G1: 35% hydrogen peroxide (n=25) and G2: 37% carbamide peroxide (n=25). The intracoronal bleaching was performed using the walking bleach technique in 4 bleaching sessions. Gingival crevicular fluid samples to determine levels of RANKL were taken with absorbent paper (Periopaper®) from six sites per tooth: 3 vestibular and 3 palatine (mesial, middle and distal), in 6 opportunities: baseline, after 4 bleaching sessions and one week after treatment. Total proteins were quantified by Bradford® system and from 100 μl of eluted sample RANKL levels were measured by ELISA (Quantikine®; R&D Systems Inc.) and expressed in pg/μL. The Mann-Whitney and Wilcoxon test were used to compare differences.

RESULTS: Levels of RANKL had significantly increased relative to baseline in all evaluated times (p<0.05). G1: baseline= 12.91, 1st week bleaching= 13.14, 2nd week bleaching= 14.63, 3rd week bleaching= 17.00, 4th week bleaching= 20.39, 1 week after treatment= 25.21. G2: baseline= 13.97, 1st week bleaching= 14.65, 2nd week bleaching= 16.05, 3rd week bleaching= 17.87, 4th week bleaching= 21.12, 1 week after treatment= 25.87. There were no statistically significant differences between the study groups (p>0.05).

CONCLUSIONS: Levels of RANKL increases after every session of intracoronal bleaching and one week after treatment, with no differences between the bleaching agents used.

Effectiveness of bleaching of hydrogen peroxide at different concentrations

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OBJECTIVE: Compare the clinical effectiveness of tooth bleaching using 37.5% hydrogen peroxide (PH37.5%) versus 6% hydrogen peroxide (PH6%), measured with spectrophotometer Vita EasyShade®.

METHODS: This is a clinical randomized double-blind split-mouth study. 19 patients periodontally healthy, without caries dental, tone A3 or higher in scale Vita Classical determined by the spectrophotometer Vita Easy Shade were treated with, one upper hemi arcade with 3 applications of 12 minutes each with a PH37.5% (Pola Office+ SDI) and the other hemi arcade with 3 applications of 12 minutes each with a PH6% (Pola Office+ SDI). Two sessions were appointed with one week of intervals between them. The color was evaluated in 6 times: baseline (L1), after first session of bleaching (L2), before and after second session of bleaching (L3-L4) a week after treatment (L5) and one month after treatment (L6). Vita Easy Shade spectrophotometer is used with the CIE L*a*b system to measure the total variation in color (ΔE), between the baseline and the different evaluation times. To ensure that the color register is in the same place with the instrument, a silicone matrix previously settle. The mean and standard deviation for the color change (ΔE).

RESULTS: Both treatment showed a change between baseline colour and all check-points with a ΔE = 9.87 for PH37.5% and of ΔE = 5.87 for the PH6% one months after completing bleaching. The difference in mean color change (ΔE), was higher in the group of PH37.5%, the difference between groups was statistically significant at different times (ΔEL2 p= 0.000, ΔEL3 p= 0.022, ΔEL4 p= 0.003, ΔEL5 p= 0.040, ΔEL6 p= 0.037).

CONCLUSION: Exists significant differences in the effectiveness of bleaching using hydrogen peroxide gel to 37.5% or 6%, measured with spectrophotometer Vita Easy Shade®.
Correlation between thermal behavior and composition of dental adhesives systems

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Objectives: To determine the thermal behavior of eleven polymeric adhesive systems under different rates of temperatures and a variety of conditions such as 100% humidity, presence of acidulated water (pH 3), environmental relative humidity and artificial saliva. Another aim was to establish if these factors are correlated with the adhesive systems composition.

Methods: For each type of adhesive system, samples were prepared in small aluminum caps and polymerized with a LED lamp. All samples were analyzed with the Fourier-Transform Infrared Spectroscopy (FT-IR) method, which assigned absorption bands to organic functional groups of each compound corresponding to their chemical type. Subsequently, a thermogravimetric test was performed in a range temperature from room temperature to 500°C in order to establish the thermal behavior in an inert environment and after staying in acidulated water, 100% humidity, environmental humidity and artificial saliva. Thermograms were obtained to collect data about decomposition temperatures and loss of mass percentages. The FT-IR study results were correlated with the polymeric adhesive systems thermal behavior.

Results: Thermogram images showed loss of mass, polymerization efficiency and residual mass amount. The different degradation dynamics were analyzed according to curve designs and baseline changes. Conclusions: Both groups of adhesive systems revealed high polymerization degrees. Nevertheless, the effect produced by the conditions in which they were subjected depends on the type of adhesive. Conventional adhesives, in contrast to self-etch adhesives, degraded in a minor extension as a result of their higher thermal stability.

Marginal Adaptation: 12 years of sealing and repair instead replace.

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OBJECTIVE: To evaluate and compare the clinical behavior of marginal adaptation of defective amalgams that were subject to marginal sealing or repair, after 12 years of follow-up, comparing with replacement.

METHOD: In 2003, 32 patients with 126 defective amalgams (bravo) were distributed into treatment groups: marginal sealing (n = 26), repair (n = 20) or replacement (n = 21), maintaining an untreated group (n = 59). After sealing, repair or replace the amalgams a calibrated examiner assessed using Ryge/USPHS criteria the marginal adaptation, establishing the baseline (alpha) of the study. Twelve years later, three calibrated examiners assessed the parameter again. The comparison of assessments defined two situations: maintenance of clinical behavior (BL alpha - 12th alpha) or deterioration (BL alpha - 12th bravo and charlie). For statistical analysis, numerical values were assigned to the criteria and the difference of the evaluations was compared between groups with Mann-Whitney test using SPSS 17.0 (SPSS Inc. Chicago, IL, USA) software.

RESULTS: After 12 years, 18 patients with 77 amalgams (61,1%) were evaluated. Maintenance (alpha): sealing = 23,1%, repair = 35% and replacement = 52,4%. Deterioration (bravo): sealing = 76,9%, repair = 65% and replacement = 47,6%. Charlie criteria was not found in any treatment group. Statistically significant differences were observed between sealing-replacement (p = 0.040).

CONCLUSIONS: Marginal sealing and repair are treatments that immediately improve the marginal adaptation of amalgams and maintain it optimal (alpha) or acceptable (bravo), even 12 years after their application and despite the inherent deterioration of the material, increasing the longevity and postponing the replacement of the restoration.
Pilot Study: Adhesive technique in dental enamel-orthodontic bracket, using erbium chromium laser

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OBJECTIVE: To determine the adhesion grade produced between orthodontics brackets and dental enamel surface by using enamel preparation with erbium chromium adhesive technique in different dosages.

METHOD: An experimental controlled pilot study, Ex-Vivo was performed. Sample was determined through simple random sampling, using six superior premolars extracted by orthodontics indication during 2016. Technical Norm ISO/TS 11405, 2015 for the premolar preservation was used. Enamel preparation was performed with an Erbium Chromium laser (Biolase, Irvine, CA) and bracket adhesion was performed with Transbond XT (3M). The effort measurement were performed with a system test with desktop and double column, Instron 3369.

RESULTS: The lower value of 7.09 MPa was produced with a 1.75 Watt potency and 20 Hz cycles with 15 seconds application and 75/90 water-earth ratio. The highest value of 15.26 MPa was produced with a 1.75 Watt potency and 10 Hz cycles with 15 seconds application and 60/70 water-earth ratio.

CONCLUSIONS: The fluence and refrigeration variables favorably influenced in a better bracket adhesion. The methodology used in this study would allow to perform an experimental controlled study Ex-Vivo with a higher sample number.

Retention of two sealants in marginal defects of composites

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Objective: To compare retention of flowable resin nanofilled (FR) composite and pit and fissure resin-based sealant (CS) after 6 months on marginal defects of composite restorations.

Method: Prospective, controlled, randomized study where 40 patients with 87 restorations were examined from the Operative Dentistry Clinic, University of Chile and signed the agreed consent form. Inclusion criteria: High risk patient with at least two posterior teeth restorations with marginal adaptation 3 or 4 according with the FDI criteria. Exclusion criteria: contraindication for dental treatment. Defective restorations on each patient were assigned into one of two groups: sealed with nanoparticle FR (Filtek Flow Z350XT, 3M ESPE) and adhesive system (AS) (Single Bond Universal, 3M ESPE) (n = 44) and sealed with fissure sealant (Clinpro Sealant, 3M ESPE) and AS (n = 43). The treatments were performed under absolute isolation, applying split etch technique 15 seconds, washed off and dried. The AS was placed with micro applicator (Microbrush international, Grafton, EUA), friction for 20 seconds on the surface and photoactivated for 10 seconds after waiting solvent evaporation. FR and CS were applied with calcium hydroxide cement instrument (PICH, Hu Friedy Mfg . Co. Inc, Chicago, IL, USA) polymerizing with curing light 20 seconds (2500 Curing light, 3M ESPE). Two blind calibrated evaluators (kappa=0.65) examined by visual and tactile inspection at baseline and 6 months later. Mann-Whitney Test was performed.

Result: After 6 months the 119 restoration where again evaluated. When analyzed by marginal retention 86% of restorations sealed with FR maintained improvement and on the sealed with CS group 79% were still sealed. (p=0.335)

Conclusion: The retention of FR and AS on marginal defects of restorations seems to be similar after 6 months.
**Sonic Application of resinous sealants in bond strength to enamel**

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**OBJECTIVE:** Evaluate the effect of sonic application of pit fissure resin sealant (RS) in the microshear bond strength (μSBS), fracture pattern (FP) and penetration capability on the tooth enamel (PC) using different adhesive strategies.

**METHODS:** For μSBS, twenty healthy extracted premolars were disto-mesial sectioned and divided into 4 groups (n=5) according to factors: 1.-Application: manual or sonic, 2.-Adhesive Strategy: conventional sealant (acid conditioning + RS [Cs]) or adhesive sealant (acid conditioning + etch and rinse adhesive systems + RS [As]). Intact enamel surfaces were fixed and adhesive strategies described were applied under manufacturers instructions. The adhesive area was defined as Shimaoka technic. Resin specimens (sp) with 0,38mm2 of cross-sectional adhesive area were made using Tygon matrix (1.1mm high x 0.7mm diameter). The sp were stored (24h/H2O-37°C) tested for microshear under tension (0.5 mm/min). All sp tested and enamel surfaces were observed under scanning electron microscopy to determine the FP, being classified in Cohesive, Adhesive and Mixed. To PC test eight (n=2) healthy extracted third molars, were restored according to described above, stored (24h/H2O-37ªC), sectioned into 4-6 slides (1mm, vest-lingual) and polishing (600/1200-Grit SiC). The degree of immediate penetration of the RS was evaluated under fluorescence microscopy observation.

**RESULTS:** Sonic application improved μSBS values when compared to the manual technique for Cs and as groups (p<0.05). Lowest bond strength values were observed in Cs under manual application (p<0.05). In the FP test, 69.6% of the sp tested were Adhesive, 19.3% Mixed and only 11.1% were Cohesive, indicating the appropriated stress distribution for μSBS. For PC test, increased capacity of impregnating grooves on pit and fissures of molars was observed with sonic application for Cs and As.

**CONCLUSIONS:** The sonic application provides better adhesive resistance to enamel for RS in both adhesive strategies, and conferred greater adaptation in grooves and fissures, when compared to manual application.

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**Post Bleaching Tooth sensitivity with different concentrations**


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**OBJECTIVE:** Compare the tooth sensitivity after bleaching using 37,5% hydrogen peroxide (PH37.5%) versus 6% hydrogen peroxide (PH6%), measured with visual analogue scale (VAS)

**METHODS:** This is a clinical randomized double-blind split-mouth study. 31 patients periodontally healthy, without caries dental, tone A3 or higher in scale Vita Classical determined by the spectrophotometer Vita Easy Shade were treated with, one upper hemi arcade with 3 applications of 12 minutes each with a PH37,5% (Pola Office+ SDI) and the other hemi arcade with 3 applications of 12 minutes each with a PH6% (Pola Office+ SDI). Two sessions were appointed with one week of intervals between them. Patients recorded the perception of sensitivity after applying the gel, through the Visual Analogue Scale (VAS), with values from 0 to 10 (0 = no sensitivity, 10 = severe sensitivity).

The data obtained were analyzed by the Shapiro-Wilk test to evaluate the normality of distribution, and then Wilcoxon test and Mann-Whitney test for comparison between groups.

**RESULTS:** Mean sensitivity after First session: PH37.5% 0.48±1.20 and PH6% 0.41±1.31 There was not statistical significant differences between them (p=0.531) . Mean sensitivity after Second session: PH37.5% 0.41±1.20 and PH6% 0.35±1.37. There was not statistical significant differences between them (p=0.450) No significant differences were founded between first and second application, for both groups, PH37.5% (p=0.831) and PH6% (p=0.785)

**CONCLUSIONS:** The sensitivity observed was minimal. Both bleaching concentrations are equivalent in this topic.
Clinical immediate performance of bulkfill composite in proximal posterior lesions—preliminary study

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**Objective:** Compare clinical immediate performance by criteria Ryge in proximal posterior restorations between two types of BulkFill composites (RBK)

**Method:** There were recruited 30 voluntary healthy patients, with at least 3 lesions of proximal caries in posterior teeth with antagonist, adjacent teeth. Were distributed randomly according to the groups. Group TB: 30 Restorations with resins Bulkfill (Tetric N-Ceram Bulkfill-Ivoclar Vivadent) Group FB: 30 restorations (Filtek Bulkfill 3M-Espe) and Group Z350 (control): 30 restorations Filtek Z350 (3M-Espe). The restorative procedure was done with absolute isolation. For all proximal cavities a thin metallic sectional matrix was used and wedging was done with wooden wedges. The cavities were conditioned in enamel for 20 seconds with 37% phosphoric acid and then rinsed, dried and applied adhesive Single Bond Universal (3M ESPE, St. Paul, MN, USA) following the instructions of the manufacturer. The TB and FB restorations were done with only layer (maximum deep 4mm) and Z350 were restored for 2 mm. multilayer. Adhesive and restorations were polymerized for 40 seconds with a Bluephase Style light-curing unit (Ivoclar-Vivadent) with a intensity of the light with 1.100mW/cm2. An operator calibrated (Cohen Kappa >0.8) evaluated the restorations by the criteria Ryge (anatomy, marginal adjustment, proximal contact, superficial texture and post operative sensitivity) to two weeks after. The statistical analysis of the information was used the software SPSS 21.0 and the Kruskal Wallis and Mann-Whitney test were used with a level of significance of 95 %.

**Results:** 97 % of the group FB and Z350 were evaluated alpha in all parameters; while in the group TB it was 100 %. There was no significant difference between the groups (p <0,05).

**Conclusion:** There is no significant difference in the immediate clinical performance by criteria Ryge between FB and TB in proximal restorations in posterior teeth.

A Bioactive Glass Primer in immediate adhesion on dentin

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**OBJECTIVE:** The aim of this study was to assess the immediate effect of a primer with Bioactive Glass [BG-primer], on biomechanics and ultra-structural properties of self-etch adhesive strategy in dentin.

**METHOD:** Ten third molars extracted caries-free, donated under informed consent, were divided into two experimental groups (n = 5): 1) using BG-primer before a self-etch (SE) adhesive strategy (SE-BG) and 2) SE adhesive strategy without BG-primer (SE), as a control. The Single Bond Universal Adhesive (3MESPE) was employed in a self-etch strategy according to the manufacturer’s instructions. After application of the adhesive strategies, standardized composite restorations (2 x 2mm increments separately photo-activated 1200mW/cm2) were performed. The teeth were stored in water at 37°C for 24 hours and sectioned (axes: “X”, “Y” and “Z”) to obtain resin-dentin specimens (SP) with 0.8mm2 cross-sectional area. The SP obtained, was tested under tension in a universal machine at 0.5mm/min to evaluate the microtensile bond strength of interface (μTBS). Selected SP from each tooth and group were used for nanoleakage pattern evaluation (NL) by scanning electron microscopy. Data from each adhesive were analyzed with one way ANOVA and Tukey’s test (α=0.05).

**RESULTS:** No significant differences were observed between groups for immediate μTBS (p> 0.05). The BG-primer did not affect the immediate μTBS of self-etching adhesive systems. The SEM evaluation showed similar NL pattern between the groups (p>0.05).

**CONCLUSIONS:** In this study, when BG-primer was incorporated in self-etch adhesive strategy it did not affect the biomechanical and ultra-structural behavior of the bonding interface, however longevity test will confirm these tendencies for further understanding of this material in the future.
Intracoronary bleaching effect on the levels of IL-1β in gingival crevicular fluid

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Objectives: Quantify the levels of IL-1β, before, during and one week after intracoronary bleaching using the walking bleach technique, with two bleaching agents.

Material and Methods: 50 teeth treated endodontically with discoloration were included. They were formed two study groups at randomization as the bleaching agent used, G1: Hydrogen Peroxide 35% (n=25), G2: Carbamide Peroxide 37% (n=25). Intracoronary bleaching was performed by walking bleach technique with a protocol of 4 sessions of bleaching. Gingival Crevicular Fluid samples (FGC) were taken to determine levels of IL-1β using absorbent paper Periopaper® at 6 sites per tooth to treat, at the following times: before the start of treatment (baseline), after each bleaching session and the week after treatment. Total protein levels were quantitated using the Bradford® system and from 100 ul of eluted sample levels were measured IL-1β by ELISA (Quantikine®, R&D Systems Inc.). The results were expressed in delta values (pg/ul median (min-max)) and differences were analyzed by Wilcoxon and Mann Whitney test.

Results: The levels of IL-1β corresponding to G1: 2.77 (-1.69 - 17.32), 9.95 (0.77 - 35.36), 21.67 (2.75 - 73.01), 40.44 (7.86 - 147.22) 66.98 (13.10 - 201.01). G2: 2.63 (-1.91 - 30.03), 8.64 (0.30 - 57.92), 18.27 (0.49 - 107.03), 34.23 (3.12 - 177.58) 62.62 (9.91 - 222.92). The levels of IL-1β significantly increased compared to baseline in all times evaluated in both groups (p<0.05). No statistically significant difference between the levels of IL-1β by comparing bleaching agents (p>0.05).

Conclusions: IL-1β levels gradually increase after each bleaching session and even a post-bleaching week. The levels achieved in the present study are consistent with those detected in inflammatory processes.

Evaluation of surface roughness different types glass ionomer cycling within the dynamics of pH

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OBJECTIVE: The purpose of this study was to evaluate the surface roughness of glass ionomer cements undergoing dynamic pH cycling, which aims to simulate changes inherent to the oral environment.

METHOD: The ionomer cements tested were glass Ketac Molar Easy Mix, Vitrebond and Maxxion R. 12 body-of-evidence (cp) were made for each brand. The glass ionomer cements were manipulated and inserted into a single increment in a matrix with the aid of disposable syringe. The polymerization procedure followed the manufacturer's recommendations for the photopolymerizable cement. The analysis of the initial surface roughness was carried out the stability of the cp mass using a contact profilometer digital, performing six readings in the center of each cp after being achieved. After registration of the initial surface roughness, cp underwent dynamic pH cycling from demineralization and remineralization solutions and roughness readings made after 28, 56 and 84 days of the making thereof. The data were submitted to two-way ANOVA and Tukey post-test (α = 0,05).

RESULTS: Immediately after preparation of the cp resin modified cement showed lower surface roughness, however similar behavior between conventional and resin modified were checked after being subjected to pH cycling for the time periods under study.

CONCLUSIONS: It was concluded that the ionomer resin glass has a higher initial surface smoothness. However from changes inherent to the oral environment, behaved similarly to conventional ionomer cements glass shape.
Objective: The aim of this clinical randomized double-blind split-mouth study was to assess the effectiveness at 12 months of a 6% hydrogen peroxide with nitrogen-doped titanium dioxide light activated bleaching agent, using VITA Bleachedguide.

Method: 27 patients were treated with: one upper hemiarcade with a 35% hydrogen peroxide bleaching agent and the other hemiarcade with a 6% hydrogen peroxide. Two applications were completed each treatment session and three sessions were appointed, with one week interval between them. Tooth colour was registered each session and 1 week and 1, 9 and 12 months after completing the treatment by subjectively VITA Bleachedguide 3D- Master. Tooth colour variation and were compared between both bleaching agents.

Results: Both treatment showed a change between baseline colour and twelve months after completing the treatment with a clinical and statistical value with a media 5.1481 for 6% and 6.1852 for the 35%. No statistical differences were seen when subjective evaluations were compared p= 0.260.

Conclusions: A 6% hydrogen peroxide with nitrogen-doped titanium dioxide light activated agent is effective for tooth bleaching, with no clinical or statistical differences to a 35% agent neither in colour change to twelve months after completing the treatment.

Clinical significance: A low concentration hydrogen peroxide bleaching agent may reach good clinical results.

Objective: Determine whether the type of tooth bleaching affects the aesthetic perception. Our hypothesis was that In Office Bleaching with immediate effectiveness, modifies further the aesthetic perception that bleaching at home.

Methods: 48 patients were randomly assigned to two groups of bleaching a) At home (n = 24), Carbamide Peroxide 10% (Whiteness Perfect FGM, Brazil) application 3 hours per day for 3 weeks b) In Office (n = 24), Hydrogen peroxide 35% (Whitegold Office. Dentsply, Argentina) application 1 session of 35 minutes. The aesthetic perception was measured previously and one week post bleaching using the OHIP-e instrument. The data obtained were analyzed by the Shapiro-Wilk test to evaluate the normality of distribution, and then Wilcoxon test and Mann-Whitney test for comparison between groups.

Results: The dental aesthetic perception, showed no significant differences (p = 0.155) in the average value of the questionnaire between the two groups. In group In Office bleaching was found significant differences (p = 0.03) in the domain functional limitation, after a week of treatment.

Conclusion: in office and at home bleaching, have a similar change in self-perception of dental aesthetics, after a week of treatment performed. Both treatments had a positive impact on the aesthetic self-perception of patients.
Effectiveness 6%HP for tooth bleaching at 12 months with Cielab-Vita Easyshade Compact

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OBJECTIVE: The aim of this clinical randomized double-blind split-mouth study was to assess the effectiveness at 12 months of a 6% hydrogen peroxide with nitrogen-doped titanium dioxide light activated bleaching agent by VITA Easyshade Compact Spectrophotometer.

METHOD: 27 patients were treated with: one upper hemiarcade with a 35% hydrogen peroxide bleaching agent and the other hemiarcade with a 6% hydrogen peroxide. Two applications were completed each treatment session and three sessions were appointed, with one week interval between them. Tooth colour was registered each session and 1 week and 1, 9 and 12 months after completing the treatment by spectrophotometer, registering parameters L*, a* and b*. Tooth colour variation and sensitivity were compared between both bleaching agents.

RESULTS: Both treatment showed a change between baseline colour and all check-points with a ΔE = 5.05 for 6% and of ΔE = 7.34 for the 35% twelve months after completing the period with a statistical difference in colour (p < 0,000), maintain the effectiveness along the period assessed.

CONCLUSIONS: A 6% hydrogen peroxide with nitrogen-doped titanium dioxide light activated agent is effective for tooth bleaching, reaching a ΔE of 5.05 twelve months after completing the treatment, however the traditional concentration is more effectiveness.

CLINICAL SIGNIFICANCE: A low concentration hydrogen peroxide bleaching agent may reach sufficient clinical results with less adverse effects.

Immediate clinical evaluation of bulk fill composite resins in class i lesions - preliminary study.

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Objective: Compare the immediate clinical evaluation by the Ryge criteria in occlusal restorations with two composite resins Bulk Fill (RBK).

Methods: 28 healthy patients were recruited, minimum of 24 teeth in the mouth with at least 3 lesions of occlusal caries in posterior teeth with antagonist. Were distributed randomly according to the groups. Group TB: 28 Restorations with Bulkfill resins (Tetric N-Ceram Bulkfill-Ivoclar Vivadent) FB Group: 28 restorations 3M-Espe Filtek Bulkfill) and Z350 group (control): 28 restorations Filtek Z350 (3M-Espe St. Paul, MN, USA). The restorative procedure was carried out under absolute isolation. Every surface was conditioned in enamel for 20 seconds with 37% phosphoric acid, rinsed, dried  and then applied Single Bond Universal adhesive (3M ESPE, St. Paul, MN, USA) according to manufacturer instructions. Every restoration was done according to the manufacturers instructions for different materials. The polymerization process, curing light used with a minimum power of 1100 mW / cm² for 30 seconds (Bluephase Style, Ivoclar Vivadent). Occlusal contacts in centric and lateral were checked with articulating paper (Roeko, Langenau, Germany). Restorations were evaluated two weeks after their preparation by the criteria Ryge (anatomy, marginal adaptation, proximal contact surface texture and sensitivity) by a calibrated operator (Kappa Cohen ≥ 0.8). Statistical analysis of data it was used SPSS 21.0 software. and the Kruskal Wallis and Mann-Whitney test were used with a significance level of 95%.

Results: 96% of the Z350 group (1 bravo case) were evaluated in all its parameters alpha, while the TB and FB group was 100%. There was no significant difference between groups (p <0.05).

Conclusion: There is no significant difference in the immediate clinical behavior by criteria Ryge between RBK classes I restorations in posterior teeth.
In vitro cytocompatibility evaluation of Biodentine\textsuperscript{TM} modified with bioactive glass nanoparticles

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OBJEKTIVE: The aim of this study was to evaluate the cell compatibility of Biodentine\textsuperscript{TM} (BD) modified with bioactive glass nanoparticles (nBGs).

METHOD: nBGs were synthesized by sol-gel method and incorporated into a calcium silicate-based cement (BD). Discs (7 x 2.5 mm) were prepared of BD, BD modified with 1\% wt. (1\%nBG/BD) and 2\% wt. (2\%nBG/BD) of nBG. Calcium hydroxide cement (Dycal, DY), and resin-modified calcium silicate cement (Theracal LC, TH) were also used as reference cements for direct pulp therapy. Discs were cultured with human dental pulp stem cells (DPSCs). Cell viability was assessed quantitatively using MTS assay after 1, 3 and 5 days of direct contact with the materials.

RESULTS: Cells cultured with BD, 1\%nBG/BD and 2\%nBG/BD showed similar viability at 3 days of incubation, whereas cell viability was increased on 2\%nBG/BD compared to BD after 5 days. The viability of cells incubated with DY and TH was significantly reduced compared to cells cultured with BD and the nanocomposites at all time points.

CONCLUSIONS: The preliminary cell assays shows that BD with 1 and 2\% wt. of nBG nanoparticles have similar or better cytocompatibility than the neat Biodentine. Calcium hydroxide and resin modified silicate-based materials present higher cytotoxic effects.

Immediate clinical evaluation of resin composite bulk fill in non-carious cervical lesions. Preliminary study

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Objective: Compare clinical immediate performance evaluated by Ryge criteria restorations of non-carious cervical lesions made with two resin composite Bulk Fill (RBK)

Methods: 33 patients were recruited, All participants were healthy and had at least 24 teeth with at least 3 non-carious cervical lesions (NCCLS) depth> 1.5 mm. The restorations were randomly allocated in three groups. TB group: 33 Bulk Fill restorations resins (Tetric N-Ceram Bulk Fill-Ivoclar Vivadent) FB Group: 33 restorations 3M-Espe Filtek Bulkfill) and Z350 (control) group: 33 restorations Filtek Z350 (3M-Espe). A single operator made the restorative procedure and was carried out under absolute isolation. No bevels were done. Each lesion was conditioned only in enamel for 20 seconds with 37\% phosphoric acid, rinsed, dried and then was applied two adhesive layers ClearFill S3Bond (Kuraray-Noritake) active. The TB and FB restorations were done with only layer (maximum deep 4mm) and Z350 were restored until 2mm. in multilayer. Adhesive and restorations were polymerized for 40 seconds with a Bluephase Style light-curing unit (Ivoclar-Vivadent) with an intensity of the light with1.100mW/cm2. An operator calibrated (Cohen Kappa >0.8) evaluated the restorations by the criteria Ryge (anatomy, marginal adaptation, color, marginal staining, surface texture and post operative sensitivity) to two weeks after. The statistical analysis of the information was used the software SPSS 21.0 and the Kruskal Wallis and Mann-Whitney test were used with a level of significance of 95 \%.

Results: 92\% of the group Z350 were evaluated alpha in all parameters, while 98\%TB and FB group were alpha in all parameters. Bravo cases were in sensitivity and marginal adaptation. There was no significant difference between groups (p <0.05).

Conclusion: There is no significant difference in the immediate clinical performance evaluated by Ryge criteria between RBK restorations of NCCLS.
Effectiveness of Nonvital bleaching with two gels measured with Vita 3D-Bleachguide.

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Objective: The aim of this study was to compare the clinical effectiveness of 35% hydrogen peroxide versus 37% carbamide peroxide upon bleaching in discolored nonvital teeth with Vita Bleachguide.

Materials and Methods: In this randomized clinical trial, 45 patients with discoloration in nonvital teeth with endodontic treatment in good conditions, participated. Two groups were randomly assigned: G1= 35% hydrogen peroxide (Opalescence Endo-Ultra- dent, USA) (n=23) and G2= 37% carbamide peroxide (Whiteness Superendo, FGM, Brasil) (n=22). The intracameral bleaching was performed with a walking bleaching technique. The color was evaluated in 7 times: baseline, after four sessions of intracameral bleaching (s1, s2, s3, s4), a week (c1) and a month (C2) after treatment. Two calibrated evaluators used the Vita bleachedguide 3D to measure the color, the numerical units of the scale are based on the brightness levels and facilitate accurate recording of shade changes during the bleaching. A numerical value was assigned to the scale to calculate the color change between sessions ($\Delta$SGU). The statistical analyses were performed using SPSS 23.0 (SPSS Inc., Chicago, Illinois, USA) using the Mann-Whitney test ($\alpha$ = 0.05)

Results: A difference was found in all evaluated times (p<0.05), except in $\Delta$SGU-s1 (p=0.41). ($\Delta$SGU-s2 p= 0.002, $\Delta$SGU-s3 p= 0.007, $\Delta$SGU-s4 p= 0.019, $\Delta$SGU-c1 p= 0.04, $\Delta$SGU-c2 p= 0.027). G1 had the highest values of delta.

Conclusions: Hydrogen peroxide is most effective in a walking bleach technique when measured subjectively with Vita Bleachguide.

Effectiveness 6%HP for tooth bleaching at 12 months with VITA classical guide.

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OBJECTIVE: The aim of this clinical randomized double-blind split-mouth study was to assess the effectiveness at 12 months of a 6% hydrogen peroxide with nitrogen-doped titanium dioxide light activated bleaching agent, using VITA classical guide.

METHOD: 27 patients were treated with: one upper hemiarcade with a 35% hydrogen peroxide bleaching agent and the other hemiarcade with a 6% hydrogen peroxide. Two applications were completed each treatment session and three sessions were appointed, with one week interval between them. It was recorded the tooth colour of the upper central left and right each session and 1 week, 1 month, 9 months and 12 months after completing the treatment by subjectively VITA Classic A1-D4 guide, which was arranged from the highest (B1) to the lowest (C4) value.

RESULTS: Both treatment showed a change between baseline colour and after 12 months initiation of the treatment with a median delta SGU= 4.63 for 6% and 5.56 for the 35%. No statistical differences were seen when subjective evaluations were compared (p<0.05).

CONCLUSIONS: A 6% hydrogen peroxide with nitrogen-doped titanium dioxide light activated agent is effective for tooth bleaching, reaching a delta SGU of 4.63 twelve month after completing the treatment, with no clinical differences to a 35% agent neither in colour change.
Effectiveness of intracoronary bleaching with two gels measured by spectrophotometer Vita Easyshade

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Objective: The aim of this randomized, double-blind clinical study was to compare the effectiveness of walking bleach technique using 35% hydrogen peroxide and 37% carbamide peroxide, measured with spectrophotometer Vita EasyShade.

Methods: Volunteer patients (n = 45) with root canal treatment made in good conditions with discolouration, were whitened with the Walking Bleaching technique. Two groups were randomly assigned: G1= 35% hydrogen peroxide (n=23) and G2= 37% carbamide peroxide (n=22). The color was evaluated 7 times: baseline, after four sessions of intracamereral bleaching (B1-B2-B3-B4), one week after treatment and one month after treatment. Vita Easy Shade spectrophotometer was used with the CIE L * a * b system to measure the total variation in color (ΔE), between the baseline and the different evaluation times. To ensure that the color register was in the same place as the instrument, a silicone matrix was previously settled. For comparison between groups, the Mann-Whitney test was used (α = 0.05).

Results: The difference in mean color change (ΔE), recorded after each bleaching session was higher in the group of hydrogen peroxide, but there was no significant difference at any time point (p> 0.05) except at sessions 3 and 4 (p<0.05). These two groups showed a high effectiveness, with at least an average of change of color of 14 units.

Conclusions: Both 35% hydrogen peroxide and 37% carbamide peroxide are highly effective for the walking bleach technique in non-vital teeth.

Subjective evaluation with Vita Classical Guide of the effectiveness of Nonvital bleaching with two gels.

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Objective: The aim of this study was to compare the clinical effectiveness of 35% hydrogen peroxide versus 37% carbamide peroxide upon bleaching in discolored non vital teeth with Vita Clasical Shade Guide.

Materials and Methods: In volunteer patients (n = 45) with root canal treatment done in good conditions with discolouration, will be bleaching with the Walking Bleaching technique. Two groups were randomly assigned: G1= 35% hydrogen peroxide (n=23) and G2= 37% carbamide peroxide (n=22). The color was evaluated Vita Clasical Shade Guide in 7 times: baseline, after four sessions of intracamereral bleaching (B1-B2-B3-B4), one week after treatment and one month after treatment, to measure the total color variation. The shade guide was arranged from highest (B1) to lowest (C4) values to assess the color and calculate the color change in the number of shade guide units (ΔSGU). The statistical analyses were performed using SPSS 23.0 (SPSS Inc., Chicago, Illinois, USA) using the Mann-Whitney test (α = 0.05).

Results: There was a significant difference at any time point (p<0.05) until week post treatment. In the month post control, there is no significant difference between the bleaching agents (p=0.59)

Conclusions: Both 35% hydrogen peroxide and 37% carbamide peroxide are highly effective for the walking bleach technique in non-vital teeth a month after treatment.
Comparative Study of Four Rotary Systems for Root Canal Preparation

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Introduction: The aim of this in vitro study was to compare the root canal preparation performed by using four different nickel-titanium rotary systems (Protaper Universal, Mtwo, Protaper Next and BioRace) on centering ratio and transportation of curved mesial root canals of mandibular molar via cone-beam computed tomographic (CBCT) imaging.

Methods: Eighty, first and second mandibular molars were selected. Access cavities were performed and the working length was determined. The mesial canals were randomly divided into 4 groups (n=20). CBCT was performed preoperatively to all samples, after which, each group was instrumented with Protaper Universal, Mtwo, Protaper Next and Biorace respectively. Irrigation with sodium hypochlorite 5% was used throughout the preparation. Once instrumented a postoperative CBCT was performed. Comparing the CBCT, the ability to maintain centricity in the root canal and transportation produced by each system at 2, 4 and 6mm from the radiographic apex was evaluated. The results were analyzed with the Kruskal Wallis test.

Results: There was significant difference in the ability to maintain centering ratio after instrumentation in the root canal at 2 and 4 mm, being Biorace® the system less able to maintain centricity. At 6 mm, there was no statistically significant difference. Biorace® produces greater transportation at 2 mm, however it is mild. No statistically significant differences at 4 and 6 mm.

Conclusions: Under the conditions of this study, neither system produced significant shaping errors in curved mesial canals of lower molars. Protaper Universal, Protaper Next and Mtwo exhibited greater preservation of the anatomy of the canals.

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Peracetic acid formulations effect on adhesive interface in space post

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OBJECTIVE: To evaluate the effect of irrigation of space for fiber post with 1% peracetic acid (PA) with low (LHP) or high (HHP) concentration of hydrogen peroxide on bond strength and penetration of the resin self-etching cement (Relyx U200) in dentinal tubules.

METHODS: Sixty roots previously instrumented and filled were prepared for intracanal fiber post. The specimens were divided into 4 groups (n = 15), according to irrigation protocol: G1, (control) distilled water; G2, (NaOCl) 2.5% sodium hypochlorite; G3, PA with LHP (LHPPA); and G4, PA with HHP (HHPPA). Then, fiber posts were cemented with Relyx U200 together with Rhodamine B. Cross sections of cervical, middle and apical root thirds were obtained, and then subjected to push-out test to assess bond strength, and confocal microscopy to assess cement penetration into dentinal tubules. Data obtained for push-out test were analyzed by using ANOVA and Tukey tests, and confocal microscopy data were evaluated by using Kruskal-Wallis and Dunn tests (α = 5%).

RESULTS: Regarding the bond strength values, in the cervical third G1 was higher than G2 (P <0.05), but similar to other groups (P > 0.05). In middle and apical thirds, G1 and G3 were similar (P > 0.05) and higher than G2 and G4 (P <0.05). Regarding cement penetration, in the cervical third groups were similar to each other (P > 0.05), except G2, which provided the lowest penetration in dentinal tubules. In middle and apical thirds, G1 and G3 provided the highest penetration (P <0.05).

CONCLUSIONS: LHPPA showed no negative effects on bond strength and penetration in dentinal tubules of self-etching resin cement Relyx U200.
Effectiveness of low concentrations of hydrogen peroxide for tooth bleaching measured with Vita-Bleaching Guide

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OBJECTIVE: The aim of this clinical randomized, double-blind split-mouth study was to assess the effectiveness at one month of a 6% hydrogen peroxide v/s 37.5% hydrogen peroxide using VITA Bleachguide.

METHOD: 20 patients were treated with: one upper hemiarcade with a 37.5% hydrogen peroxide bleaching agent (pola office+ 37.5%, SDI, Australia) and the other hemiarcade with a 6% hydrogen peroxide (Pola Office+ 6%, SDI, Australia). Three applications were completed each treatment session and two sessions were appointed, with one-week interval between them. Two calibrated independent examiners was taken the color in the lateral incisive, at the beginning and end of each treatment sesión, and one week and one months after completing the treatment by subjectively VITA Bleachguide. Mean and standard deviation were calculated to evaluate ΔSGU on each group. For comparisons between groups, the Mann-Whitney test (α = 0.05) was used.

RESULTS: Both treatments showed a change between baseline color and one months after completing the treatment (ΔSGU 37.5% = 3.4 ± 1.4 and ΔSGU 6% = 2.9 ± 1.3 No statistical differences were seen when subjective evaluations were compared in any times (p>0.05).

CONCLUSIONS: A 6% hydrogen peroxide is effective for tooth bleaching, with no clinical differences to a 37.5% agent. A low concentration hydrogen peroxide bleaching agent may reach good clinical results.

Effectiveness 6% Hydrogen Peroxide for tooth bleaching measured with VITA classical guide.

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OBJECTIVE: The aim of this clinical randomized, double-blind split-mouth study was to assess the effectiveness of a 6% hydrogen peroxide comparing with 35% hydrogen peroxide, using VITA classical guide.

METHOD: 20 patients were treated with: one upper hemiarcade with a 37.5% hydrogen peroxide bleaching agent (pola office+ 37.5%, SDI, Australia) and the other hemiarcade with a 6% hydrogen peroxide (Pola Office+ 6%, SDI, Australia). Three applications were completed each treatment session, and two sessions were appointed, with seven days interval between them. Two calibrated independent examiners was taken the color in the lateral incisive, at the beginning and end of each treatment sesión, and one week and one month after completing the treatment by subjectively VITA Classical Guide, which was arranged from the highest (B1) to the lowest (C4) value. Were calculated to evaluate ΔSGU in each group. For comparisons between groups, the Mann-Whitney test (α = 0.05) was used.

RESULTS: Both treatments demonstrated a change between baseline color and all check-points with a ΔSGU = 6.9 ± 1.4 for 37.5% hydrogen peroxide and of ΔSGU = 6.2 ± 1.4 for the 6% hydrogen peroxide at one month follow up. No statistical differences were observed when subjective evaluations were compared in any times (p>0.05).

CONCLUSION: A 6% hydrogen peroxide agent is effective for tooth bleaching, with no clinical differences to a 37.5% agent neither in color change.
Patient’s self-perception of dental aesthetics after intracoronary bleaching at one-month follow-up.

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Objective: Evaluate the change in psychosocial-impact of dental aesthetics in patients with intracoronary bleaching at one-month follow-up.

Materials and Methods: 50 patients older than 18, of both genders, who were subjected to intracoronary bleaching with peroxide hydrogen 35% (G1) and peroxide carbamide 37% (G2) were evaluated. OHIP questionnaire was applied to measure the self-perception of dental aesthetics 3 times, before bleaching (baseline), in the week after bleaching and one month after treatment.

Results: The sum values (median (min:max)) were: initial G1= 18 (5:38) G2 = 19 (5:42); week after bleaching G1 = 13 (3:33) G2 = 15 (4:41) and one month after treatment G1 = 14 (2:31) G2 = 13 (5:41). Significant differences (p<0.05) were found in the sum values and the topics of functional limitation, psychological discomfort, psychological disability and disadvantage, when comparing the baseline with one week after bleaching, and baseline with one month after treatment. The comparison between the two groups in this study had not significant difference (p>0.05).

Conclusions: Intracoronary bleaching has a positive effect on the self-perception of dental aesthetics

Minimally Invasive Treatments: 12- year evaluation using clinical criteria

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OBJECTIVE: The aim of this double-masked controlled trial is to compare the clinical behavior of direct restorations with minimal intervention treatments to using two clinical criteria.

METHODS: In 2003, 200 amalgam and composite resin restorations with localized defects were allocated to five groups of minimal intervention treatment (MIT): Sealing, Refurbished, Repair and Replace or Untreated. Twelve years later, were assessed clinically with Ryge/ modified USPHS and FDI criteria for three calibrated examiners (Cohen Kappa = 0.81 interexaminer). For statistical analysis Kruskal- Wallis test was used to compare between groups and Wilcoxon test to compare the evaluation criteria using SPSS 17.0 (SPSS Inc. Chicago, IL, USA) software.

RESULTS: To evaluate marginal adaptation (MA) and anatomic form (AF) using Ryge/ modified USPHS criteria all groups were predominantly found Bravo (p= 0,2 to MA y p= 0,7 to AF). For secondary caries (SC) 100% of restorations were Alpha.

Using FDI criteria, for MA and AF all groups showed a high concentration in assessments 2 and 3 without significant statistically differences between the groups (p=0,1 to MA, p=0,8 to AF and p=1 to SC).

The results obtained with both criteria were grouped into “Excellent”, “Good” and “Unacceptable”. FDI restorations evaluated for MA and AF were predominantly Excellent while doing so with Ryge/ modified USPHS concentrated mostly Good (p = 0.00). SC no differences were found.

CONCLUSIONS: MIT improve the clinical behavior of restorations with localized defects even 12 years after their application increasing the longevity postponing the replacement of the restoration which when evaluated with FDI have better clinical conditions than evaluated with Ryge/ modified USPHS
Statins toxic? - a “dentistry” perspective.

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OBJECTIVE: Statins are prominent cholesterol-lowering drugs. Evidence suggests a potential role against periodontitis. The aim of this study is to evaluate the dose-dependant viability and cytotoxicity of Atorvastatin (ATV) and Simvastatin (SMV) on epithelial and fibroblast cell lines.

METHOD: NIH/3T3 (murine fibroblast) and HEK293 (human epithelial) cells were cultured and treated for 72 hours with different dosages/concentrations of ATV and SMV. Viability was evaluated using a commercially-available mitochondrial-activity based kit (PrestoBlue/LifeTechnologies). Cytotoxicity was determined via staining the cells with AnexinV and DAPI (early-apoptosis and necrosis markers) for detection and quantification using flow cytometry.

RESULTS: Statins have a dose-dependent effect. Both cell lines suffered negative viability at dosages higher than 1 µM for SMV and 0,1 µM for ATV. HEK 293 cell line showed a mild positive proliferation activity from 0,025 µM to 1 µM ATV; however, no proliferation changes were observed at any sub-µM concentration of SMV. Interestingly, the NIH/3T3 cell line showed no proliferative changes at sub-µM dosages of both statins. Flow cytometry confirmed our in vitro observations, where a significant apoptotic effect ensued in both cell lines at sub-µM doses of the investigated statins. Hence, concerns vis-à-vis the safety of statins seem critically valid.

CONCLUSIONS: Understanding dose-responsiveness of statins is vital. While concentrations below 0,1 µM of ATV or SMV are cyto-safe and -compatible, therapeutic potential; especially against periodontal disease remains to be tackled: a subject of ongoing research at BioMAT*X.

Push-out test of fiber post luting bulkfill resin with different diameter root canal

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Objective: Compare push-out adhesive strength measured in megapascals (MPa) of fiber posts luting with Bulkfill resin in root canals with different diameters.

Methods: The root canals of 15 single-rooted were endodontically treated for simulated an oversized root canal, a crown down technique was used, irrigation was performed with 5.25% NaOCl, filled with gutta-percha and resin-based sealer (TopSeal, Dentsply). The roots were stored at 37ºC in 100% humidity for one week. Post spaces were prepared to depth of 10 mm, leaving an apical seal of 5 mm of gutta-percha in the canal space. Randomly divided into three groups based on the canal preparation with drill Peeso number 2, 4 and 6 (Group D2, D4 and D6 respectively). The fiber post (FP) used was Exacto nº1 (Angelus, Brazil). FP was clean and applied silane. The root canal were etched with 37% phosphoric acid for 15 seconds, rinsed and dried with paper points. Adhesive XP Bond (Dentsply) was applied inside the root canals with microbrushes according to the manufacturer's instructions. FP were luting with resin bulkfill SureFil SDR flow (Dentsply) and exposed to the curing light 1100 Mw/cm2 (Bluephase Style, Ivoclar-Vivadent). The specimens were subjected to 500 cycles of thermo cycling. Cross sections of cervical, middle and apical root thirds were obtained and subjected to push-out assess bond strength. The type of failure was observed by optical microscopy and statistical analysis based on the test one-way Anova and post-hoc Tukey with level 95% significance.

Results: The median was D2 (31.36), D4 (26.44), D6 (21.97). There was not different significantly between all groups (p>0.05) except among the diameters of root canals D2 and D6 at the cervical third (p<0.05),

Conclusions: There was not statistically significant difference between of FP luting with Bulkfill resin in root canals with different diameters. There was lower value bond strength in the group D6 in cervical third.
Dental occlusal morphology recovery by two technics: a comparative study.

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Objective: To compare the occlusal morphology and the presence of breaches in enamel-restoration interface between two restoration techniques using composite resin.

Methods: The study was in-vitro, descriptive and cross-sectional. Eight third molars divided into two groups, A and B, were used (two maxillary and two mandibular molars for each). Occlusal cavities were performed in the teeth, following the central occlusal groove, with 4mm length, 3mm width and 2mm deep. The group A was restored using composite resin by free-hand technique. In the group B, an occlusal surface reproduction by an impression with transparent self-curing resin was performed before cavity preparation. Posteriorly, this impression was compressed against its corresponding tooth whose cavity created was filled with composite resin, for rebuild its occlusal anatomy before the polymerization. The samples without polishing were analyzed by scanning electron microscopy to compare the topography and morphology achieved and to evaluate the enamel-restoration interface.

Results: The occlusal morphology details, as developmental grooves, defined cusps or ridges, were not evident by naked eye inspection under normal room illumination in both groups. However, the scanning electron microscopy images of the teeth from group B showed a better morphology with a marked central groove and defined cusps, although the secondary and supplementary grooves were poorly defined. Additionally in the same group, microscopic hemispherical depressions on restoration surface, caused for the resin used for impression, were observed. Both groups showed breaches between enamel and restoration without significant differences between them.

Conclusion: The technique used in the group B does not seem to offer a significant advantage. This technique is recommended when the carious lesion is observed under the occlusal surface with conserved anatomy. This preliminary experience needs to improve the protocol to avoid the presence of breaches between enamel and restoration and to achieve a better occlusal morphology.

Aesthetics Psychosocial-Impact post bleaching vital teeth by PIDAQ

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OBJECTIVE: The aim of this study is evaluate the changes in Psychosocial Impact of dental aesthetics (PIDAQ) in patients undergoing bleaching teeth.

METHODS: 20 patients older than 18 years, of both gender, who were subjected to tooth bleaching with dental tone A3 or larger in scale Vita Classical determined by the spectrophotometer Vita Easy Shade. PIDAQ questionnaire was applied to measure the self-perception of dental aesthetics in 3 times (before bleaching (baseline), in the week after treatment, one month later). For comparisons between groups, the Wilcoxon test ($\alpha = 0.05$) was used.

RESULTS: The results show that there is statistically significant difference between measuring the perception of Psychosocial Impact before bleaching versus the post-evaluation at the month later vs de baseline (p<0.05), there no difference between the baseline and the week after the treatment (p>0.05). The dimensions self-confidence, psychological impact and aesthetics concern were a positive impact during the assessed times.(p<0.05)

CONCLUSIONS: There is a positive effect on psychosocial impact in patients undergoing teeth bleaching comparing the baseline time and a month after de treatment.
The effect of fermented lingonberry juice on Candida glabrata intracellular protein expression

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Lingonberries have a long traditional use in treating fungal infections on mucosal membranes, but very little is known about the exact antifungal mechanisms. We tested the effects of fermented lingonberry juice (FLJ) on Candida glabrata intracellular protein expression. A Candida glabrata clinical strain was grown in the presence of FLJ. Also the effects of lowered pH was tested. Intracellular protein expression levels were analyzed by the 2-D-DIGE- method. Six proteins detected with ≥ 1.5-fold lowered expression levels from FLJ treated cells were further characterized with LC-MS/MS. Hsp 9/12 and redoxin were identified with peptide coverage / scores 68 / 129 and 21 / 26 respectively. Hsp 9/12 had an oxidized methionine at position 56. No differences in protein expression levels at pH 3.5 compared to pH 7.6 were found. These results demonstrate that FLJ exerts an intracellular stress response in Candida glabrata plausibly impairing its ability to express proteins related to oxidative stress or maintaining cell wall integrity.

Immediate dentin sealing using an adhesive system of etch-and-rinse in a single-bottle

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OBJECTIVE: Evaluate the values of microtensile bond strength with an immediate dentin sealing (IDS) procedure when an adhesive system of etch-and-rinse in a single-bottle is used in the making of indirect composite restoration.

METHOD: Ten included third molars with indication of extraction, complete crown formation a no dental malformation were obtained and divided into two groups of five teeth. The teeth were worn on its occlusal surface using an abrasive disc in a trimmer machine until the dentin at the middle third of the crown was reached. Group A was treated with the IDS protocol using an adhesive system of etch-and-rinse in a single-bottle (Adper Single Bond 2); Group B, after been worn away the dentin it immediately proceeds to making of provisory. Provisionalization of both groups was made with a temporary restorative system (Systemp® Inlay) and they were stored in saline for seven days at 37°C and then removed. A layer of composite resin was applied with the purpose of simulate the cement used in indirect restorations, previous application of the adhesive uncured. The resin was cured with curing light of 1100 for 20 seconds each increment. The samples were axially sectioned until obtain a total of 30 test subjects per each study group. The test subjects were submitted to a microtraction test to evaluate microtensile bond strength. Statistical analyses were performed using the Shapiro Wilk test and T-Student with 95% of significance.

RESULTS: According to the means comparison analysis of microtensile bond strength the p-value was 0.0182 (p <0.05), the mean of the group A was 28,7 Mpa (±9,72) and for group B was 23,8 Mpa, (±7.45)

CONCLUSIONS: The microtensile bond strength values on the dentine can be increased by using a Immediate Dentine Sealing protocol when an adhesive system of etch-and-rinse in a single-bottle (Adper Single Bond 2) is used.
Count of arginolytic and acidogenic bacteria in saliva and plaque from children with and without caries.

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OBJECTIVE: Establish the correlation between alkalinogenic bacteria and arginolytic bacteria, like Streptococcus sanguinis and Streplococcus gordonii, with oral health in children aged 6 and 7 years old.

METHOD: Samples of saliva and plaque were taken from 110 children aged 6 and 7 years old in the northern area of the RM. Dental examination determining DMFT was performed. Extracting DNA from each sample was performed and determined the amount of Streptococcus sanguinis, Streplococcus gordonii and Streplococcus mutans by qPCR (Real-time PCR). The data were analyzed and correlated by caries experience and number of copies per milliliter of each bacteria tested.

RESULTS: The abundance of S. sanguinis in plaque and saliva is higher for "caries free" (CF) group than for "active caries" (CA), however, the results are not significant. S. gordonii shows greater abundance in the CA group than in CF being significant only for plaque samples. In S. mutans, the count was greater in the group CA in plaque and saliva than CF, both of significant results.

CONCLUSIONS: Bacteria S. sanguinis and S. gordonii are not exclusive of caries-free subjects, being present in all groups evaluated with different cariogenic activity. There is a trend of greater abundance of S. sanguinis in plaque and saliva in children CF. On the other hand, S. gordonii does not have a positive association with caries-free subjects. S. mutans is present in all groups, but mostly count resides in subjects CA group, there was a significant positive association. Finally, the qPCR tool can be useful in contributing to our knowledge of the composition of the dental biofilm.

Acid Resistance and Identification of Lactobacillus spp. in Chilean Children

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OBJECTIVE: To determine whether Lactobacillus spp. isolates obtained from caries lesions of children aged 7-11 are more acid resistant and differ from the species isolated from saliva of children with or without caries experience.

METHOD: After signing informed consent, 8 caries-free and 9 caries-active children were recruited. Saliva and caries site samples were taken and plated on MRS agar medium, selective for Lactobacillus, at pH 6.2 and 4.2, and incubated 48 hours at 37°C in capnophilic environment. Growth at different pH was recorded and 10 colony forming units (CFU) were randomly selected from each plate to obtain genomic DNA using the FTA® Whatman® protocol. A 16s rRNA gene fragment was amplified by PCR using specific Lactobacillus primers and then sequenced in Macrogen Corp., USA. Bacterial species were determined using the BLAST program and the rRNA database from the NCBI (www.ncbi.nlm.nih.gov). To analyze the statistical results, Fisher Test was applied.

RESULTS: Lactobacillus spp. obtained from caries site samples showed more acid resistance than the species found in saliva samples from the same children aged 7-11 with caries experience (p=0.084). L. fermentum and L. rhamnosus, were found significantly associated with the saliva samples from caries-free children (p=0.0007 and p=0.002), L. salivarius and L. johnsonii/L. gasseri were found significantly associated to the saliva samples from caries-active children (p<0.0001 and p=0.04) and L. casei / L. paracasei were found significantly associated to the caries site samples (p=0.0005).

CONCLUSIONS: Lactobacillus spp. isolated from caries site samples are more acid resistant than those isolated from saliva samples from the same children. The species found in caries site samples and saliva samples from caries-free and caries-active children differ from each other.

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Interaction between Streptococcus sanguinis and Candida albicans in oral cavity

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OBJECTIVE: To evaluate the growth between Streptococcus sanguinis (S. sanguinis) and Candida albicans (C. albicans) in co-culture.

METHODS: Growth competition assay in THB™ liquid and solid medium was realized using S. sanguinis SK36 or S. mutans ATCC 25175 and C. albicans (ATCC 90029) or P1-1 (clinic isolate of a child with active caries). pH and viable cells for each liquid co-culture was determined. Growth inhibition in solid medium was evaluated by the presence of inhibitory halo next to any of the microorganisms. Assays were incubated in microaerophile conditions to 37 °C for 48 h with and without agitation, respectively. The Minimum Inhibitory Concentration (MIC) of H2O2 for both yeasts strains in solid Sabouraud Agar™ medium was performed. Furthermore, the concentration of H2O2 produced by S. sanguinis was determined according a standard curve previously designed with a stock solution of 30% H2O2. Data were analyzed by descriptive form, comparing medians inter and intra group.

RESULTS: In solid medium, C. albicans produced inhibitory halo on S. sanguinis. Regarding the single cutures, the growth of S. sanguinis and C. albicans (ATCC and P1-1) in co-culture was increased. Furthermore, they always basified the medium, regarding the initial pH. The MIC for both strains of C. albicans was 0,1 mM of H2O2. The estimated production of H2O2 of S. sanguinis was 0,059 µM.

CONCLUSIONS: This study suggest a positive interaction between S. sanguinis and C. albicans in liquid co-culture. Furthermore, C. albicans modifies the growth of S. sanguinis in solid medium. Likewise both microorganisms could contribute to maintain a pH compatible with oral health. The effect of H2O2 in C. albicans would be subjeto its concentration in the medium.

Quality evaluation of fluoride clinical practice guidelines for caries prevention in children and adolescents: a critical review

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OBJECTIVE: To evaluate the quality of clinical practice guidelines (CPGs) regarding the use of fluorides in dental caries prevention.

METHOD: We performed a systematic search of scientific literature published between 2005 and 2015 to identify and select the CPGs about caries preventive measures. The search was conducted using MEDLINE, EMBASE, LILACS, TripDatabase databases and websites of CPGs developers. We included CPGs that contained recommendations of fluoride in caries prevention, declared a systematic search of literature and evaluated the level of evidence to develop their recommendations. Two reviewers independently evaluated the CPGs using the AGREE II instrument which has 23 items (1 to 7 points each item) divided in 6 domains (scope and purpose, stakeholder involvement, rigour of development, clarity of presentation, applicability and editorial independence). The reviewers also considered the overall quality of the CPGs and made a final recommendation about each CPG. In discrepancies of more than two points in an item, consensus was reached between the two reviewers. We classified the CPGs as high quality when at least 3 of the domains showed a score of 60% or higher, including the rigour of development domain.

RESULTS: Eighteen CPGs were selected from a total of 587 references. The mean score for each domain using the AGREE II instrument were: scope and purpose 93%±9% (range: 81-100%); stakeholder involvement 60%±14%(36-92%); rigour of development 68%±22% (24-96%); clarity of presentation 89%±12% (range: 50-100%); applicability 35%±31% (0-92%) and editorial independence 57%±24% (4-88%). Thirteen (72,2%) of the CPGs were “recommended”, three (16,7%) were “recommended with modifications” and two (11,1%) were “not recommended”. The same thirteen CPGs described as “recommended” were classified as high quality.

CONCLUSIONS: Our critical review shows that the overall quality of the CPGs regarding the use fluorides for caries prevention was high. The greater deficiencies were related to applicability and editorial independence.
Oral Anticoagulant Therapy: To suspend or not? A systematic review.

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OBJECTIVE: To establish, by analyzing the best available evidence, the risk of bleeding in patients with oral anticoagulant therapy undergoing oral surgery when treatment is maintained, versus the treatment suspension or modification.

METHODOLOGY: The search strategy included major electronic databases (Pubmed, Embase, Cochrane-Central), hand searching of specialized journals and IADR congress abstracts. Two researchers in parallel conducted study selection, data extraction and risk of bias assessment. The studies selected were randomized clinical trials investigating the controversy raised before.

RESULTS: Five studies that met the inclusion criteria were selected. Through a meta-analysis, a trend at increased risk of bleeding in the group of patients who maintained therapy was obtained (RR 1.41 [0.93- 2.16]; CI 95%; p =0.39; I²=3%).

CONCLUSION: While there is a tendency to post-surgical bleeding in patients who maintain unchanged its anticoagulant therapy, compared to those who suspended or modified, this difference is not statistically or clinically significant. Following this, we can conclude that suspension or modification of oral anticoagulant therapy is not justified, while the patient treatment is in therapeutic ranges (INR 1-3).

Undergraduate clinical training: are the same dogmas still relevant?

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OBJECTIVE: Compare the teaching methodologies used in the clinical courses of Chilean Dental School with methodological approaches used by well reputed international universities.

METHOD: Descriptive investigation in which online questionnaires were addressed to 16 Odontology Colleges in Chile, a bibliographical revision of the last 10 years publications was also done. Then a comparison of the answers, considering methodologies of teaching, procedures and approaches for promotional prevention used in the clinical courses.

RESULTS: The most used methodologies of theoretical teaching used in Chile are: lectures and case studies; very low presence of debate, critical analysis of papers and Learning+Service. As to the development of clinical procedures, all colleges have minimal requirements, 72% requires discharged patients according dentistry specialties, 37% of the discharged patients have an integral approach. The range of strategies to integrate preventive and promotional actions is extremely varied. The three most used are: include them in clinical actions, to consider the approach of individual risk and/or consider the extension activities are the proper environment to develop these abilities.

CONCLUSIONS: We can conclude that as to the teaching of clinical courses, in the Chilean Colleges interviewed, the methodologies that persist are those that do not promote critical appraisal, the continous learning, focusing on isolated procedure actions, and that do not allow for centering on health maintaining through an individualized preventive/promotional approach. On the other hand, evidence shows that the abilities before mentioned are strengthen and consolidated when work is done in small groups, emphasizing self evaluation and feedback on the clinical performance, the use of files and the approach-centered in the patient. This way of teaching accomplishes the integration of the assistance work and strengthens the focus of prevention and promotion. Add to that, the responsability for the maintainance of the health of the patient is fostered as part of professionalism.
Controlled clinical trials in chilean dental journals: A pending debt.

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Objective: Controlled clinical trials are the best methodology to evaluate an intervention, equipment or technique in humans, and they form the basis for the realization of systematic reviews. For the identification of clinical trials, the search strategy from search engines fails to identify journal articles that are not indexed in a database, so the manual search would be the best method for this goal. This paper seeks to identify retrospectively, to the fullest extent possible, existing controlled clinical studies in chilean dental journals.

Methodology: A retrospective descriptive study was conducted by handsearching controlled clinical trials in Chilean dental journals until 2014, without excluding any specialty. To be eligible, the journal must be periodically publish original investigation, no matter if it was active at the time of the search.

Results: 16 dental journals that met the inclusion criteria were reviewed. They identified 1933 articles, of which 53 (2.74%) were controlled clinical trials, corresponding mainly to specialties of Periodontology (36%) and Oral and Maxillofacial Surgery (33%).

Conclusions: Most of chilean dental journals are not indexed in the most important databases. While there is a significant volume of publications, only 2.74% of the papers were controlled clinical trials, which represent the best evidence for the evaluation of interventions in humans. This highlights the need to introduce this methodology within research groups, given the importance of good level of evidence to support decisions made daily in the practice of dentistry.

Learning styles and sketchnotes evaluation outcomes in periodontology

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OBJECTIVE: To assess the influence of Visual, Auditory, Kinesthetic (VAK) learning styles in evaluation outcomes in Periodontology I subject at University of Valparaiso, using a visual learning strategy called sketchnotes, as a summative evaluation.

METHOD: The first unit of periodontology was innovated using sketchnotes as an alternative assessment and summative evaluation. Sixty-nine students were evaluated with 5 individual sketchnotes per student representing physiological conditions of the periodontium, and as a collaborative group with a big integrative sketchnote with all the contents as well. Learning Styles were assessed with VAK Test. Data were tabulated and statistical analysis performed with One Way ANOVA, using STATA 12.

RESULTS: Neither individual sketchnotes (p=0,45) nor group test (p=0,14) showed statistical differences in the VAK groups.

CONCLUSIONS: The different VAK learning styles did not produce statistical differences in the outcomes of individual of group evaluations using a visual learning strategy sketchnotes as a summative evaluation in Periodontology I.
Self Learning study in Dentition Evolution subject.

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Presenter Status: Undergraduate Degree Holder.

Objectives: Elaborate a Self-Instruction Manual about Dentition Evolution subject; quantify the student’s effective knowledge previous to the Manual adoption, quantify the grade of effective knowledge reached by the students through the Manual use and compare the level of knowledge before and after the adoption of the Manual.

Method: We made a Self-Instruction manual about “Dentition Evolution” subject through the Johnson and Johnson method, a diagnosis test and a post test with questions related to the manual topic. The sample corresponded to 46 students from the “UTE de bases anatómicas y biológicas de cabeza y cuello” (student work unit anatomical and biological bases of head and neck), which participated as volunteers. The participants signed an informed consent and realized a diagnostic test. Then, we handled the Manual in PDF format for them to study and nine days later they had to realize the post test. The obtained results were analyzed and compared according the grade achieved, correct, incorrect and omitted answer percentage and the obtained answers per question percentage. We realized the statistical analyze by the Wilcoxon signed-rank test and Chi2 in the STATA/SE 12 program.

Results: The obtained efficiency in the diagnosis test was a 4.4 grade, while the one in the posttest was 6.5. The correct answers total percentage in the diagnosis test was of 51%, then in the posttest they arise to 90% (p=0.00). The incorrect answers decreased from 43% to 10% (p=0.00), meanwhile the omitted percentage reduced from a 6% to a 0% (p=0.00)

Conclusions: The Self Learning method by a self-instruction manual allows that the effective knowledge of the “Dentition Evolution” subject in the “UTE de bases anatómicas y biológicas de cabeza y cuello” students from first year of undergrad of the Universidad de Chile Odontology faculty.

Prevalence of Early Childhood Caries in children 3-4 years old.

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OBJECTIVE: Compare the prevalence of early childhood caries (ECC) in children attending public and private preschool education in the borough of Peñalolén, Metropolitan Region in the year 2012.

METHODS: The sample consisted of a cohort of 200 preschool students between 3 and 4 years and eleven months old of both sexes from different preschools in the borough. Patients were examined intraorally, using the dmft index to determine the prevalence of caries.

RESULTS: It was determined that the prevalence of caries in children attending both, private and public preschools was 54%. In the case of children attending public preschools the prevalence was 63.75% and for those attending private preschools was 15%. The mean of the dmft index found in children for public preschools was 2,719 compared to the index obtained in children attending private preschools which was 0,175 marking significant differences (p = 0.000).

CONCLUSIONS: This study showed that the social determinants of health remain as an important factor in the prevalence of ECC, therefore children from vulnerable families are the most affected with a diminished oral health.
Prevalence of Early Childhood Caries in preschool Integra Valparaiso

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Objective: Determine the prevalence of Early Childhood Caries (ECC) and Severe Early Childhood Caries (SECC) in preschoolers of Integra Valparaíso. Relate the prevalence and severity according to age, gender and kindergarten.

Methods: This prevalence study was conducted with a sample of 230 children aged 2 to 5 years 11 months and 29 days old. Previously the kappa calibration was realized. Once the authorization of the Integra Foundation was given, a letter was sent to the directors of the kindergarten and the consent for each caregiver. The presence of ECC was determined by an oral examination with the previous assent of the child. The index used to measure the level of caries was the ceo and personal data were recorded in the file for each preschool.

Results: The prevalence of ECC is 66.5%. The prevalence of SECC is 37.1%. The average age with the presence of this type of decay is 3.2 years and the presence of this increases with age. Of the total subjects with presence of ECC, 48.3% are women and 51.7% are men which is not statistically significant (P= 0.780). It also happens with SECC to relate to gender, where 50.6% are women and 49.4% men, which also resulted that there is no statistically significant (P= 0.497). Considering the low economic status of all the gardens studied, the presence of ECC is not statistically significant between them (P=0.67).

Conclusion: The prevalence of Early Childhood Caries in the studied preschool is 66.5%. Four out of ten children in the study group presents SECC. As for the presence of ECC and SECC increase with age, while gender, in this age level, no influence. There is no relationship between the presence of ECC and SECC and the studied children gardens.


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Objective: The objective of this study was to determine the relationship between passive smoking in children and caries experience at a local level in Talca.

Method: A pilot cross-sectional study was made with a convenience sample of 60 patients of University of Talca (30 exposed and 30 non-exposed) between 5 and 12 years old who had finished their dental treatment. PS exposure was evaluated by a NHANES survey (about smoking and tobacco). Caries experience was determined by deft (decayed extracted, filled teeth) and DMFT (decayed, missing, filled teeth) indexes. The severity of lesions was evaluated by ICDAS II index.

Results: Dental caries experience was higher in the exposed to passive smoking group (p <0.001) (DMFT: 4.6 , deft: 7,3 exposed, DMFT:1,5 deft 3, non-exposed). In boys, deft and DMFT were higher in the study group compared with the control group (DMFT: 4,9, deft: 6,75 exposed; DMFT 1,08, deft: 3,06 non exposed). Girls obtained similar results (DMFT: 4,88 , deft: 7,58 study group; DMFT: 1,4, deft: 9 control group). Exposed children had more severe caries compared with control group (p < 0.001).

Conclusions: This study suggests a negative relationship, between passive smoking and caries in children of 5-12 years. Exposed children had higher caries experience and also more severe caries lesions.
Dentoalveolar Trauma, description of FOUCH patients, 2014-2016

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OBJECTIVE Describe sex, age, most prevalent tooth, cause of trauma and diagnosis of patients of dentoalveolar trauma on the Faculty of dentistry, University of Chile’s clinic (FOUCH), since 2014 to 2016.

METHOD This study included 56 patients of FOUCHs Clinic with dentoalveolar trauma, we search on their files and, with their approval, we analyzed the data. Then we compare sex, age, most prevalent tooth, cause of trauma and diagnosis with references around the world.

RESULTS Of 56 patients, 19 were women and 37 men, the average age was 11,5 on women and 10 in men. 59% of the cases were on one teeth and 41% in more than one. 91% of the cases were on maxillary teeth, 5% on mandibular and 3,5% on both. 85 teeth were traumatized, 40% was 1.1, 37,6% was 2.1. The most prevalent trauma was falling (60,7%), hit (35,7%), hook (3,5%). About diagnosis root fracture was 21,4,5, non-complicated fracture 19,6%, complicated fracture 19,6%, avulsion 19,6%, luxation 14,2%, necrosis 1,7%, concussion 1,7%.

CONCLUSIONS The results matches with the data around the world. Age and sex are an important risk factor. Permanent, anterior teeth are the most traumatized. In most cases only one tooth is traumatized. Falling and risk games are the most important cause of trauma, this is associated to the sex and age, where young male are most risk and intense at the time of playing. Also, the diagnosis on most cases includes pulp injurie. While it’s important the opportunity of the emergency treatment, all of dentoalveolar trauma injuries requires a more complex treatment and monitoring plan that includes vitality test, endodontics control, control of bone resorption and esthetic restorations.

Prevalence of oral diseases in children with special needs.

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OBJECTIVE: Establish caries prevalence and periodontal disease in children with special health needs aged 6 and 12 years old, attending special schools within the Maule Region.

METHOD: A descriptive cross-sectional study was performed. Population studied were children with special health needs aged between 6 and 12 years old, attending special needs schools in Curicó and Talca commune within the Maule Region. Caries prevalence was determined using DMF/def index and periodontal disease using community periodontal index.

RESULTS: Of a total of 49 children with special health needs examined, 26 children are 6 years old and 23 aged 12 years old. In 6 years old children caries prevalence is 61.50%, being more prevalent in boys. A prevalence of 88.46% was detected for periodontal disease, with higher prevalence in girls. Within the 12 year old group caries prevalence was 73.91%, with a higher prevalence in girls and a periodontal disease with 100% prevalence rate.

CONCLUSION: It can be suggested that special health need children show a high prevalence of caries and periodontal disease. It is important to carry further studies with a wider population including the whole region.
Objective: to know the numerical nomenclature used currently by dentists to identify the teeth of the permanent denture.

Methods: in Santiago in 2015, 182 dentists were surveyed, 109 women (59,9%) and 73 men (40,1%); 116 in public health services (63,7%), 46 in private practices (25,3%) and 20 in universities (11%). They were grouped according to the years of professional experience, 0-4 year (30,8%), 5-9 years (31,3%) and 10 and more years (37,9%). Using the numerical nomenclature, every dentist identified the marked tooth in a sequence of 20 digital dental pictures. The data were tabulated and analyzed statistically with the Stata v 14 program. A descriptive statistic was carried out and an association was determined between the nomenclature and the following features of the dentists: gender, place of survey and years of experience.

Results: out of the 182 dentists, 106 (58,2%) used the national nomenclature, 57 (31,3%) the international nomenclature with two digits divided by a point, 4 (2,2%) the Palmer nomenclature, 15 (8,24%) used the national one in some teeth and the international in others. When the Pearson’s chi-squared test was applied, no association was found between results and gender (Pvalue 0.448) but association was found between results and place of survey (Pvalue 0,001) as well as between results and years of professional experience (Pvalue 0,000). The Dunn’s Post-hoc test revealed that the answers of the dentists surveyed in the public health services and the dentists with 10 years and more of experience differ from the answers of the other groups (Pvalue < 0.05 in each category).

Conclusions: the dentists surveyed use different numerical nomenclatures to identify the same tooth, which makes it advisable to use, at the same time, the name of the tooth in the professional interrelationships.

Objective: To improve the aesthetic of young permanent teeth affected by diffuse and demarcated opacities in children 10 to 15 years old.

Materials and methods: Twenty four hypomineralisation coming from 12 patients were classified in diffuse opacities (n=14; white) and demarcated opacities (n=10; yellow/brownish) and subjected to microabrasion, whitening and remineralisation all in at least three-treatment sessions, attempting to blend colour opacities with sound enamel. Photos were taken before and during the entire clinical procedure. The extent of opacities was assessed with the DDE index criteria (less that 1/3, at least 1/3 -2/3 and at least 2/3). Correspondence of colour opacities with sound enamel was assessed by visual inspection.

Results. After treatment, the colour of the 14 diffuse opacities (extension at least 1/3-2/3) obtained the best aesthetic outcomes, being significantly harmonized with sound enamel. However, in demarcated opacities (5 with an extension of less than 1/3 and 5 with at least 1/3-2/3) improvement in aesthetic results were slightly perceptible or unnoticed.

Conclusion: The aesthetic treatment proposed here was not beneficial with demarcated opacities even in the small ones. However, it seems to be effective in moderate diffuse opacities where aesthetic changes in optical properties (similarity with sound enamel) were significantly obtained. This three-steps-combined treatment could be a minimally invasive approach when compared with traditional adhesive restoration. The aesthetic effectiveness of this novel approach in diffuse opacities warrants further investigations.
Prevalence and severity of ankylosis in deciduous molars between 2014-2015
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OBJECTIVE: To determine the prevalence of ankylosis in children in Valparaiso and to establish the correlation between the level of severity of infraocclusion and their clinical or radiographic consequences.

METHODS: 509 randomly selected charts of pediatric patients with their respective orthopantomographies of 2014 or 2015 in three health centers. The presence of infraocclusion was analyzed according to demographic variables, severity and consequences generated. Descriptive statistics and correlation analysis were used to check severity and quantities of consequences that might appear.

RESULTS: The prevalence of infraocclusion was 11.61%, being 5.3% in women and 6.2% in men. The highest value was observed in the intertransicional period, at the age of 8 years (2.95%), teeth most affected were 7.4 (23%) and 8.4 (24%), with a ratio of 1:9 (maxilla:jaw). There was an apparent positive correlation between the level of infraocclusion and the presence of consequences, such as, antagonist overeruption, mesialization or distalization of the teeth related, tooth eruption delay and abnormal pattern of tooth resorption (R: 0.44, r2: 0.1963).

CONCLUSIONS: The prevalence of ankylosis between the three centers was 11.61%. There is a correlation between the severity of infraocclusion and its effects.

Dentoalveolar anomalies in pediatric patients treated in a dental school.
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Objective The aim of this communication is to describe the distribution of dentoalveolar anomalies in pediatric patients treated in the dental school, University of Antofagasta.

Material and method: The study was retrospective, descriptive and transversal. Clinical records stored in the dental school of the University of Antofagasta were analyzed. Inclusion criteria for selection were the follows: records correctly completed of systemically healthy patients from seven to fourteen years old, without genetic anomalies, syndromic disease or congenital craniofacial pathology, treated from 2013 to 2015. The aspects registered for the studied were defect in the interdental relation (vertical anomalies), ectopic eruption, midline deviation, and transversal or compressive anomalies.

Results A total of 371 records were analyzed, 189 females (50.94%) and 182 males (49.06%). The most observed anomaly was the dental crowding (55.53%), mostly affecting the fifth group (53.40%) followed for patients with the second and fifth groups affected (30.01%) and patients with only the second group affected (13.11%). 48.52% of patients showed midline deviation, 19.41% deep overbite, 14.29% anterior open bite, 12.13% crossbite, 6.47% inverted bite and 4.58% dental malposition or ectopic eruption. No significant difference was observed between females and males in all dentoalveolar alterations studied.

Conclusion High prevalence of dentoalveolar anomalies was observed in the clinical records studied, which can be an indicator of elevated incidence of future malocclusions in adulthood. Also, anterior dental crowding has relevance in several others aspects, such as oral hygiene/plaque retention, the altered topography of gingiva, alveolar bone and periodontal therapy. The pediatric patients with these occlusal alterations may require early attention to be healthy adults.
Enamel defects in pediatric patients treated in a dental school.

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Objective: To describe the prevalence of Enamel Hypoplasia and Hypomineralization in pediatric patients treated in the dental school, University of Antofagasta.

Material and method: The study was retrospective, descriptive and cross-sectional. Clinical records stored in the dental school of the University of Antofagasta were analyzed. Inclusion criteria for selection were the follows: records correctly completed of systemically healthy patients from seven to fourteen years old, without genetic anomalies or syndromic disease, treated from 2013 to 2015. Information about Hypoplasia and Hypomineralization were registered considering specific teeth affected in permanent and primary dentition.

Results: A total of 371 records were analyzed from 189 females (50.94%) and 182 males (49.06%). Hypoplasia was diagnosed in 25.27% of females and 24.87% of males. The most affected permanent tooth was the maxillary central incisors (29.06% of females and 28.32% of males) followed for maxillary lateral incisors (21.37% of females and 15.04% of males), maxillary first molars (9.40% of females and 13.27% of males) and mandibular first molars (8.55% of females and 11.50% of males). No significant difference was observed considering the side of tooth affected. Generalized dental hypoplasia was observed in 3.17% of females and 3.85% of males. Generalized Hypomineralization of permanent teeth was observed in 3 patients (one female and two males). Other primary and permanent teeth diagnosed with hypomineralization were observed in seven females and five males. There is no significant difference in the distribution by sex of both dental alterations studied.

Conclusion: The prevalence of dental hypoplasia observed in the sample of clinical records was higher compared to national information available and some international antecedents. It is necessary to analyze the size and extension of the lesion by specific tools and to search possible causes of this phenomenon in the group studied.

Effects of breathing type on electromyographic activity of respiratory muscles.

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OBJECTIVE: To compare the influence of the breathing type on electromyographic (EMG) activity of diaphragm (DIA), external intercostal (EIC), sternocleidomastoid (SCM) and latissimus dorsi (LAT) muscles at different body positions.

METHOD: This study included two groups of eight healthy young men each, one with upper costal and the other with costo-diaphragmatic breathing type. Each subject was classified as upper costal breathing type, when during inspiration at rest the superior thoracic expansion was predominant, or costo-diaphragmatic breathing type, when the abdominal and lateral costal expansion was predominant. The participants were students enrolled at the Dental or Medical School of the University of Chile, and all subjects selected had complete natural dentition (excluding the third molars), no history of orofacial pain, heart or respiratory disease. Surface electrodes were placed on right DIA, EIC, SCM and LAT muscles. A large ground surface electrode was attached to the forehead. EMG activity was amplified, rectified, integrated, and then recorded online in a computer exclusively for the acquisition and processing of EMG signals. Three unilateral EMG recordings were performed at lateral decubitus, supine and prone positions during the following tasks: 1) normal quiet breathing; 2) speaking the word “Mississippi”; 3) forced deep breathing. The mean value of the three curves obtained at each task and for each subject was used. In accordance to data distribution (Shapiro-Wilk test), t-test or Mann-Whitney U-Test was used. A value of p<0.05 was considered statistically significant.

RESULTS: DIA activity at rest and during speech was significantly higher in subjects with upper costal than costo-diaphragmatic breathing type in the lateral decubitus position. DIA activity during speech and forced deep breathing was significantly higher in subjects with upper costal than costo-diaphragmatic breathing type in the supine position. SCM activity during forced deep breathing was significantly higher in subjects with upper costal than costo-diaphragmatic breathing type in the prone position (P < 0.05).

CONCLUSIONS: These results suggest differences in the respiratory effort depending on the breathing type.
**DNA methylation levels and risk of NSCL/P: A pilot study.**
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**OBJETIVE:** To evaluate the association between methylation levels of DNA from leukocytes and the risk of nonsyndromic cleft lip with or without cleft palate (NSCL/P) in a Chilean sample.

**METHODS:** In a case-control study we evaluated the levels of global methylated DNA in a sample of Chilean NSCL/P cases (n = 20) and controls (n = 20) matched by age and gender proportions. The levels of methylated DNA were measured in blood leukocytes using an ELISA-platform colorimetric kit (MethylFlash™ Methylated DNA Quantification) an expressed in ng of 5-methycitocine (5-mC). This variable was expressed as median in interquartile range in each group and compared using the non parametric test of Wilcoxon.

**RESULTS:** The levels of global methylated DNA in the control group were significantly higher than the affected group (p< 0.0001).

**CONCLUSION:** The results suggests that the subjects affected by NSCL/P have less global methylated DNA levels, which could support the hypothesis that folates/one-carbon metabolism may be involved in the etiology of the NSCL/P. Additional studies are necessaries in order to increase the sample size and to elucidate that the differences here reported among cases and controls are explained by genetic or environmental factors or the interaction between them.

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**Does breathing type influence electromyographic activity of respiratory muscles?**
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**OBJETIVE:** To compare the influence of the breathing type on electromyographic (EMG) activity of diaphragm (DIA), external intercostal (EIC), sternocleidomastoid (SCM) and latissimus dorsi (LAT) muscles at different body positions.

**METHOD:** This study included two groups of eight healthy young men each, one with upper costal and the other with costodiaphragmatic breathing type. Each subject was classified as upper costal breathing type, when during inspiration at rest the superior thoracic expansion was predominant, or costo-diaphragmatic breathing type, when the abdominal and lateral costal expansion was predominant. The participants were students enrolled at the Dental or Medical School of the University of Chile, and all subjects selected had complete natural dentition (excluding the third molars), no history of orofacial pain, heart or respiratory disease. Surface electrodes were placed on right DIA, EIC, SCM and LAT muscles. A large ground surface electrode was attached to the forehead. EMG activity was amplified, rectified, integrated, and then recorded online in a computer exclusively for the acquisition and processing of EMG signals. Three unilateral EMG recordings were performed at lateral decubitus, supine and prone positions during the following tasks: 1) swallowing of saliva; 2) maximal voluntary clenching in the intercuspal position. The mean value of the three curves obtained at each task and for each subject was used. In accordance to data distribution (Shapiro-Wilk test), t-test or Mann-Whitney U-Test was used. A value of p<0.05 was considered statistically significant.

**RESULTS:** EMG activity in the four muscles studied showed no significant difference between upper costal and costodiaphragmatic breathing types in any of the tasks studied (p>0.05).

**CONCLUSIONS:** This EMG result suggests that there is no significant difference in the respiratory effort depending on the breathing type at the body positions studied.
Introduction: The study of the shape, dimensions and characteristics of dental arches has been of interest to physical anthropologists and dentists, with the objective of establishing normal parameters, discovering differences and characterising distinct population groups. It is known that there is a correlation between transverse development of the cranial base and morphology of the dental arch.

Objective: To evaluate possible covariation between morphology of the mandibular dental arch and intercondylar distance. To determine the role of sex in these variations and to identify points on the dental arch which feature most in shape variations.

Materials and methods: Observational study, analysis of cross section. 80 individuals took part, half women, half men, of whom a standardized intraoral photo was taken of the mandibular dental arch, as well as a measurement of the intercondylar distance. Using geometric morphology, a matrix of morph-coordinates XY was created in the programme TPS. These data were analysed using MorphoJ software, determining the presence of covariation between intercondylar distance, shape of the arch, role of sex in variation and significant points which featured most in differences of shape.

Results: With respect to covariation between shape and intercondylar distance, low correlation was found, which was statistically insignificant for both variables. With respect to the role of sex, no statistically significant differences were determined (p = 0.0648). The points which most heavily featured in shape variation were, in the anteroposterior plane, the second molar and central incisors; in the transverse plane, the second premolar and second molar.

Conclusions: No covariation between shape of the mandibular dental arch and intercondylar distance was found to exist. Points which most featured in shape variation were: second molar, central incisor and second premolar. The shape of the dental arch varied independent of sex. Geometric morphology is shown to be a powerful tool for studying morphological variations of craniofacial structures.
**Evaluation of precision of Tanaka-Johnston and Moyers methods.**

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**OBJECTIVE:** The purpose of this study was to determine the accuracy of Tanaka-Johnston and Moyers indexes through the initial analysis of study models with permanent teeth of Chilean patients in Santiago.

**METHODS:** 100 pairs of models were selected by convenience as the inclusion and exclusion criteria established, corresponding to 50 female and 50 male. Direct measurement was performed with a manual caliper gauge by two examiners previously calibrated. The sum of permanent mandibular incisors and sum of segments canine-premolar were measured. The accuracy of each of the present methods and statistical differences were determined.

**RESULTS:** In females, the prediction of width of unerupted canines and premolars is more accurate on maxilla with Moyers 65% and mandible with Moyers 50%. For males, Moyers 75% on maxilla and Moyers 65% in mandible are more accurate. Tanaka-Johnston method although only presented statistically significant differences in mandible of female gender (p <0.05), is less accurate tending to overestimate actual values in women as in men underestimated.

**CONCLUSION:** Moyers method is more accurate in predicting space required in Chilean patients, the confidence level varies according to gender and jaw. Differences are explained by sexual dimorphism and ethnic variations from the source population of prediction methods.

**Electromyographic activity evaluation in subjects with and without lip competence.**

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**OBJECTIVE:** To compare the electromyographic (EMG) activity of superior orbicularis oris (SOO), inferior orbicularis oris (IOO), suprahyoid (SH) and infrahyoid (IH) muscles in subjects with and without lip competence during different tasks.

**METHOD:** Were included two groups of young healthy subjects, one with lip competence and other without lip competence, classified according to a clinical criteria (n=11 per group), with complete natural dentition, no history of orthodontic treatment in the last 12 months, and no history of oro-facial pain. Surface electrodes were placed on the left SOO, IOO, SH and IH muscles. A large surface ground electrode was attached to the forehead. EMG activity was amplified, rectified and integrated and then recorded online in a computer exclusively for the acquisition and processing of EMG signals. The system was calibrated before each record. EMG activity was recorded in seated upright body position with the head unsupported, looking straight ahead and his/her head in the postural position, during the following tasks: 1) rest; 2) speech; 3) forced deep breathing. The data were submitted to appropriate statistical analysis (α = 0.05).

**RESULT:** SOO and IOO EMG activity did not show significant differences during tasks 1. SOO was significantly higher in subjects with incompetent lips than in subjects with competent lips during tasks 2, whereas IOO did not show significant differences. SOO and IOO EMG activity was significantly higher in subjects with incompetent lips than in subjects with competent lips during task 3. SH and IH EMG activity did not show significant differences in any of the tasks studied.

**Conclusions:** SOO and IOO muscular activity recorded at rest (task 1) could be explained base on a lip compensation mechanism in our young adult sample of incompetent subjects studied. Higher SOO muscular activity during speech of the word “Mississippi” (task 2) observed in subjects with lip incompetence could be a compensation mechanism of higher muscular effort caused by the necessity of lip seal during this function. This is the first study that has found a significantly higher SOO and IOO muscular activity during forced deep breathing (task 3) in subjects with lip incompetence. This is a new finding in the EMG behaviour of these muscles in subjects with lip incompetence. SH and IH EMG activity recorded suggests that its predominant stabilizing role of the hyoid bone is not significantly modified by the presence or absence of lip competence.
Immediate Dental effects caused by the use of a Banded Herbst appliance in Class II division 1 subjects after pubertal growth peak.

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**Objective:** Dental changes produced by the use of a Banded Herbst appliance in the mandibular Curve of Spee (COS), irregularity Index (Little) and mandibular incisors proclination were evaluated.

**Method:** Digital 3D bimaxilar dental models of 34 patients (22 males, 12 females) after pubertal growth peak were analyzed before (T1, without treatment) and after (T2) 8 months of therapy with Banded Herbst appliance. Using points, planes and lines created through VistaDent® (GAC) software, deep of COS, Irregularity Index and mandibular incisor inclination were measured. Interclass correlation coefficient and t test were calculated to evaluate the measurement errors; and dental changes between the stages T1 and T2 were compared with paired t test (significance level= 0.05) performed with the GraphPad® (California, US) software.

**Results:** Measurement errors were not significant. A COS deep increase (mean -1.47 mm, P <0.00005), irregularity increase (mean -1.89 mm; P <0.00005), and a different proclination between laterals (32: mean, -3.01, P <0.05; 42: mean, -3.83, P <0.005) and centrals incisors (31: mean, -1.80°, P <0.05; 41: mean, -2.43°, P <0.05) were found.

**Conclusion:** The results suggest a negative clinical significant increase in the deep of COS, irregularity index, and mandibular incisor proclination after 8 months of banded Herbst appliance therapy.

Association between diagnosis of skeletal class and facial biotype.

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**OBJECTIVE:** To determine the association between the diagnosis of skeletal class according to Steiner cephalometric and Wits, versus the classification of facial biotype according to the VERT index.

**METHOD:** The sample consisted of 130 digital cephalometric radiographs of patients older than 18 years who were treated in a private practice located in Viña del Mar. The cephalometric were analyzed in the Nemoceph® program. Skeletal classification was determined through cephalogram Steiner and facial biotype through the VERT index. Two operators were responsible for verifying the correct location of points and transfer the data to an Excel table. The association test Chi Square Pearson was used.

**RESULTS:** Of the total sample, most turned out to be Class I (54%), followed by Class II (35%) and Class III (12%). In relation to facial biotype, similar percentages were found between meso and brachyfacial (38%), whereas 23% of the sample result to be dolicofacial. The chi-square test showed no association between skeletal class according to the diagnosis of Steiner cephalometric and facial biotype according to Index Vert (p> 0.05).

**CONCLUSIONS:** Class I patients tend to be mesofacial, Class II and III patients tend to be distributed evenly. No association between skeletal classification and facial biotype was found.
Quality of life of children with cleft lip and cleft palate with use of pre-surgical orthopedic plate.

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OBJECTIVE: To analyze the oral health–related quality of life of children with cleft lip and cleft palate treated with and without pre-surgical orthopedic plate according Spanish-language version of the Child Oral Health Impact Profile scale (COHIP-Sp) belonging to public hospitals in Chile.

METHOD: A retrospective cohort study was designed. Ninety-one children (65.9% male) between 8 to 15 years old (mean 11.4±2.2 years) from Hospital Base of Valdivia city, Gantz Foundation and Hospital San Borja Arriarán from Santiago of Chile were participated. Patients who have telephone contact and go to the controls were selected. They were classified as a group "OPQ" children with use of pre-surgical orthopedic plate according to the treatment protocol; and as group “No-OPQ” who do not receive treatment with the plate. The COHIP-Sp was applied to both groups. Quality of life was compared according to the overall score on the COHIP-Sp scale between two groups (t-test, p <0.05).

RESULTS: The COHIP-Sp score was 89.1±25.6 in OPQ group and 90.1±25.3 in No-OPQ group. There was no statistically significant difference in the total COHIP-Sp scale between both groups (p=0.74).

CONCLUSION: The oral health–related quality of life of children with used of pre-surgical orthopedic plate was similar to that who did not use.

Nasopharyngeal Area of the Upper airway in Different Skeletal Facial Types

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Objective: To study the nasopharynx area as part of the URT in different skeletal types (class I, class II and class III)

Method. 83 Cephalograms were made from a standard lateral teleradiography taken in maximal intercuspal position. The age range of individuals studied was 18-22 years and gender (27H, 56M). SNA, SNB and ANB angles of Steiner and angle SN-GoGn were determined. From Steiner ANB angle and the angle SN-GoGn, ANB was determined according to Miralles allowing the classification of different skeletal types linearly. The permeable area of the nasopharynx was determined according to Oktay (2008), Delago (2008) and Becerra (2016).

Results:

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>Male</th>
<th>Female</th>
<th>Area nasopharynx (cm²) mean+/- se</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>42</td>
<td>13</td>
<td>29</td>
<td>3.18 +/- 0.01</td>
</tr>
<tr>
<td>Class II</td>
<td>25</td>
<td>5</td>
<td>20</td>
<td>3.54 +/- 0.13</td>
</tr>
<tr>
<td>Class III</td>
<td>16</td>
<td>9</td>
<td>7</td>
<td>3.00 +/- 0.15</td>
</tr>
</tbody>
</table>

There is statistically significant difference between the area of the nasopharynx of individuals Class II and Class III (p <0.014) being lower in Class III, also comparing class II and class I (p <0.025) being lower in class I. Between class I and class III there are no significant differences.

Conclusions: Individuals class II according to ANB angle adjusted by Miralles presents greater nasopharyngeal area than the class I and class III skeletal type. The Class III could present more nasal airflow resistance.
Objective: To determine changes in periodontal clinical and imaging parameters of patients with reduced periodontal and pathological tooth migration undergoing orthodontic treatment

Method: Two female patients, with an average 60 years of age, with chronic periodontitis and pathological tooth migration (MPD) for periodontal disease receive nonsurgical periodontal treatment (TPNQ) and during the supportive periodontal therapy (TSP) are performed orthodontic treatment under the protocol for patients with reduced periodontium differentiated according brackets cementation bone level and the application of mild, intermittent forces. Periodontal clinical parameters such as gingival recession (RG), probing depth (PS), clinical attachment level (NIC) pre and post periodontal and orthodontic treatment and radiographic parameters with Cone Beam, pre and post orthodontic treatment are evaluated.

Results: After TPNQ, RG= 1.8 mm, PS= 3.1 mm, NIC= 3 mm. In average, the duration of orthodontic treatment was 3 years, MPD correction was achieved during TSP with orthodontic treatment, obtaining an average reduction of RG = 2 mm, PS = 3.8 mm, NIC = 4.1 mm. MPD correction was achieved. No alveolar bone loss was evident in Cone Beam. Monitoring was performed by both patients least 2 years post orthodontic treatment without adverse effects to treatment.

Conclusions: MPD correction in periodontal patients under the orthodontic protocol for patients with reduced periodontium improvement the periodontal clinical parameters, maintains stability periodontal without alveolar bone loss, resolving the functional and aesthetic problems of patients.

Proteomic analysis of Acquired Pellicle, after exposure to hydrochloric acid.

OBJECTIVE: The objective of this study was to analyze the changes in the protein profile of the acquired enamel pellicle (AEP) formed in vivo, after application of hydrochloric acid (HCl).

METHODOLOGY: Nine subjects were submitted to dental prophylaxis with pumice. After 3 or 120 minutes, the teeth were isolated with cotton rolls and subjected to three procedures: application of 50μ 0.1 M HCl (pH = 1.0), 0.01 M HCl (pH = 2.0) or deionized water for 10 seconds. The applications were made with a volumetric pipet on the buccal surface from incisor teeth to first molar, upper and lower. Subsequently, the AEP was collected using an electrode filter paper pre-soaked in 3% citric acid. This procedure was done in duplicate for each phase of the experiment and a "pool" was made with the filter papers obtained from the nine volunteers for each treatment. After protein extraction, the samples were submitted to reverse phase liquid chromatography coupled to mass spectrometry (nLC-ESI-MS/MS). Label-free quantification was performed using Protein Lynx Global Service (PLGS) software.

RESULTS: A total of 178 proteins were successfully identified in the AEP samples collected in all groups. From these results 12, 1, 27, 52, 43 were identified as unique for the groups treated with water (3 min), pH = 2.0 (3 min), water (2 hours), pH= 1.0 (2 hours) and pH= 2.0 (2 hours) respectively, however non protein was exclusively for the group treated with pH= 1.0 (3 min). Four proteins were common between the six groups such as two isoforms of IgA, Serum Albumin and Statherin which are typically found in the acquired pellicle.

CONCLUSION: The presence of hydrochloric acid was able to change the protein profile of the AEP, however the main proteins already described on AEP were found even in the presence of the acid.
Antibiotic prophylaxis in patients undergoing tooth extractions.
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OBJECTIVE. The present investigation was undertaken to study antibiotic prophylaxis in patients undergoing tooth extractions during the year 2013 at the Clinica UDD-La Florida, Universidad del Desarrollo and evaluate if indication criteria were in accordance with national and international standards.

METHOD: A descriptive, observational and longitudinal study was performed. 898 electronic dental records (SMILE software) were analyzed to describe the use or not use of antibiotic prophylaxis in patients undergoing tooth extractions at the dental clinic, Universidad del Desarrollo-La Florida, Santiago, Chile. as well as the type an dosage of antibiotics used before surgery.

RESULTS: 21% of the sample received antibiotic prophylaxis. A single dose of amoxicillin, 2 gr. one hour before surgery was the most frequent scheme for antibiotic prophylaxis. Criteria whether to use or not prophylaxis at the Clinica UDD-La Florida matched national and international standards by 76%; 14% of the patients received prophylaxis although it was unnecessary, and 10% of the sample of patients had no antibiotic prophylaxis even though they should have received it.

CONCLUSIONS: Most patients undergoing tooth extractions at the Dental Clinic, Clinica UDD-La Florida, Santiago, Chile received the benefit of antibiotic prophylaxis when such therapy was justified although a slight tendency to overuse was observed.

Human salivary proteases used as aging biomarkers.
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Objective: Determine presence of a protease type aging biomarker in saliva.

Methods: 4 subjects of different ages (non-smokers without systemic or oral diseases) were recruited and assigned in two groups: the young group (<25 years) or elderly group (>55 years). Unstimulated saliva was collected (3ml) and centrifuged for 5 minutes at 10,000g. The supernatant of the samples was collected for further protease expression analysis for 35 different proteases. This analysis was performed using a "Proteome Profiler Human Protease Array" (R&D technologies) in nitrocellulose membranes. Briefly, saliva samples (1ml) and primary detection antibodies were incubated 12 hours. Subsequently, they were incubated with HRP conjugated secondary antibody. Nitrocellulose membranes were revealed with chemiluminescence reactives. Finally, the protease expression levels were evaluated through intensity-area pixels measurement using IMAGEJ64 image processor.

Results: Various proteases were highly expressed in salivary fluid, mainly MMP-8 and MMP-9. Most of the proteases analyzed in this study, maintained their expression levels throughout age. However, some proteases like MMP-7, ADAM-8, NEPRILYSIN showed increased levels in the elderly group, while levels of MMP-8, MMP-9, ADAMTS-13, Cathepsines(S and V), Kallikreins (5 and 7) were increased in the young group.

Conclusion: Saliva is a human biofluid composed of a large number of molecules, being a rich source of Kallikreins and Cathepsines, as well as MMPs and other proteases. The increase of these proteases in elderly subjects might suggest the use of salivary peptidases as aging biomarkers. This is consistent with increase in levels of Neprilysin in saliva during aging, which has been described as a valid aging skin biomarker.
Effect of serum obtained from young and elderly volunteers in proliferation of young human gingival fibroblasts.

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AIM: To evaluate if a young gingival fibroblast is exposed to an extracellular environment obtained from blood serum of volunteer from different ages behavior in a way dependent of the age measured as cell proliferation.

MATERIAL AND METHODS: Primary cultures of fibroblasts were obtained from explants of retromolar tissue, during third molars surgery from 5 young healthy donors. Serum was obtained from 10 mL of venous blood from 40 young and elderly healthy volunteers. We synchronized HGF during 16h in DMEM serum free and incubated with 10% blood serum from young volunteer (18-22 years old) middle age (30-48 years old) and 50-65 years old during 24 hours. Cell proliferation measured with immunofluorescence as Ki67 nuclear incorporation and through flow cytometry as DNA content using propidium iodide. Levels of PDGF were diluted 5 times and analyzed by ELISA.

RESULTS: Cell proliferation decreased with significant difference when adding serum from middle and old age. We measured synthesis of DNA by flow cytometry, we observed that control cells have 8,85 ±1,7% of cells in phase S, cells treated with young serum 36,6 ±1,54%, treated with middle age serum were 27±1,7% and cells treated with old serum were 20,5 ±1,32%. HGF treated with young serum displayed a higher proportion of Ki67/nuclei 65,25% versus 34,1% middle age and 7,4% old. PDGF decreased with age, finding amounts of 3352±267,2pg/mL in young serum, 2879± 307,8 in middle age serum, and 2305±138,3pg/mL in old serum.

CONCLUSIONS: The present study suggests that fibroblasts proliferation decreases when providing cells of an aged enviroment. We can conclude that from middle age onward, serum will have similar influence in decrease of cell proliferation. PDGF levels decrease with age, The proliferation and levels of PDGF, appear to be related, both decreased with the age.


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Objective: Characterizing mortality rates associated with oral cancer in the Region of Antofagasta in the period between 2002 and 2012.

Materials and Methodology: A transversal study was designed. Mortality records between 2002 and 2012 were obtained from Instituto Nacional de Estadísticas - INE. Raw mortality rates were calculated using the published records on the national population by the Ministry of Health.

Results: In the RA, OC mortality corresponds to the 0.9% from the total of deaths caused by cancer. 58% of them were men and 42% women (1,3:1). 96% of the subjects were older than 45 years. The bones of face (22%) were the most frequent locations of OC, followed by the tongue (18%), other locations poorly defined (17%), and parotid glands (15%).

Discussion: The higher presence of OC in men and average age goes in line with previous reports (Ramírez y col., 2015). However, this is not the case with the most frequent anatomical zone of OC. This may be due to the environmental impact of mining activities in this region. It is worth mentioning that a high percentage of OC was found in poorly defined locations, which possibly occurred due to the absence of protocols when taking samples.

Conclusions: In the Region of Antofagasta, the bones of the face, tongue and other locations poorly defines were the most affected anatomical zones with OC. Male subjects older than 45 years were more susceptible to have OC compared to women of the same age range.
Characterization of Maxillofacial Oral Cancer Mortality Rates in the Region of Bío-Bío 2002-2012

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OBJECTIVE: The objective of this study is characterising mortality caused by oral cancer in the Region of Bío-Bío in the period between 2002 and 2012.

METHOD: A transversal study was designed. Mortality records between 2002 and 2012 were obtained from Instituto Nacional de Estadísticas - INE. Raw mortality rates were calculated using the published records on the national population by the Ministry of Health.

RESULTS: In the RB, OC mortality corresponds to the 0.68% from the total of deaths caused by cancer. 68% of them were men and 32% women (2,1:1). 93% of the subjects were older than 45 years. The mouth floor (19%) was the most frequent location of OC, followed by the tongue (16%) and parotid glands (14%).

CONCLUSION: In the Region of Bío-Bío, the mouth floor is the most frequent anatomic zone of OC, followed by the tongue and parotid glands. Male subjects older than 45 years are the most susceptible population to develop OC.

Activation of unfolded protein response in Sjögren’s syndrome patients.

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Introduction. Labial salivary glands (LSG) of Sjögren’s syndrome patients (SS-patients) show alterations indicative of endoplasmic reticulum (ER) stress. These include altered posttranslational processing of MUC5B, intracellular accumulation of MUC1/SEC and MUC7, and dilatation of ER cisterns. To counteract ER stress and restore ER homeostasis or activate pro-apoptotic pathways, eukaryotic cells activate a series of complementary adaptive mechanisms referred to as unfolded protein response (UPR). The UPR is mediated by three transducers located in the ER membrane: ATF6α, PERK and IRE1α. ER stress and the UPR have recently been linked to inflammation in a variety of human pathologies including autoimmune, infectious, neurodegenerative, and metabolic disorders. The aim of this study was to evaluate UPR activation in acinar cells of LSG of SS-patients.

Methods. In LSG of SS-patients and controls, protein levels and mRNA of ATF6α, PERK and IRE1α, and pathways components (XBP1s, BiP, EDEM1, SEL1L, elF2α/p-elF2α, ATF4, CHOP), were determined using q-PCR and Western-blot. The subcellular localization of transducers and pathway components was evaluated by confocal immunofluorescence.

Results. SS-patients showed a significant increase in protein levels of ATF4, ATF6α, EDEM1 and CHOP. A significant decrease in protein levels to PERK, IRE1α, XBP1s, BiP, were observed. The mRNA levels showed increase to ATF6α and SEL1L, and decrease to ATF4, IRE1α, XBP1s, and BiP. Localization of transducers showed no differences between the two groups under study.

Discussion. In SS-patients the constant presence of high levels of cytokines, contribute to perpetuate inflammatory environment, establishing a chronic ER stress condition. The activity of the IRE1α/XBP-1s pathway appears reduced, while ATF6α and PERK pathways are activated. This activation would allow to control chronic ER stress and prevent cellular death by apoptosis.

Fondecyt-1120062/Conicyt fellowship (JC, MJB)
Synaptotagmin-i and TNF-α modify exocytosis and Ca\(^{2+}\) signaling in 3d-acini.

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Introduction. Sjögren’s syndrome (SS) patients present exocrine glands dysfunction and high levels of cytokines, such as TNF-α. Synaptotagmin-I (SYT-I) acts as a linker between Ca\(^{2+}\) stimulus and the exocytic machinery, and is upregulated in SS-patients labial salivary glands (LSG). Salivary acinar cells shown changes in polarity and proteins localization, both in vivo and in 3D-acini treated with pro-inflammatory cytokines. In this study, we determined the effect of TNF-α and Syt-I overexpression on the exocytic events in 3D-acini model.

Material and methods. Syt-I was overexpressed in 3D-acini of HSG cells with transfection, its protein levels were determined by Western blot, and its subcellular localization was analyzed by immunofluorescence and confocal microscopy. Ca\(^{2+}\) signaling was measured using fluorescent dyes sensitive to changes in Ca\(^{2+}\) concentrations. Exocytic activity was assessed by amperometry and FM 1-43. To alter cell polarity, TNF-α and/or a blocking antibody against α6 integrin were used.

Results. Exocytic processes and Ca\(^{2+}\) signaling were dependent on acinar cell-polarity. TNF-α incubation alters Ca\(^{2+}\) signaling and Syt-I overexpression change the expression of Ca\(^{2+}\) signaling proteins (Serca 2b). TNF-α incubation and Syt-I overexpression induce an increase in the number and magnitude of exocytic events at the basal pole in 3D-acini.

Discussion. Increased Syt-I levels in SS-patients could be indicators of Ca\(^{2+}\) signaling alterations. TNF-α incubation and Syt-I overexpression generated in a 3D-acini model mimicked the changes observed in exocytic events and polarity LSG of SS-patients.

Fondecyt-1120062/Conicyt fellowship (JC,HU, MJB), Beca Apoyo de tesis.

Frequency of oral manifestations in inflammatory bowel disease. Observational study.

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2 Faculty of Dentistry, Desarrollo University

OBJECTIVE: Determinate the frequency of manifestations and/or oral mucosal lesions in patients with inflammatory bowel disease (IBD) of the NGO "Association Ulcerative Colitis" (UC) and "Crohn’s disease (CD). Santa María Clinic"

METHOD: This is a descriptive, observational, cross-sectional study, with a non-probabilistic for convenience sample with patients diagnosed with IBD attending the previously mentioned NGOs. During the months of April to July 2015, one investigator performed intraoral examination, recording diagnosis and description of injuries according to location, type of disease, age and gender of the patients. The data was tabulated and analyzed.

RESULTS: 30 patients (23 UC and 7 CD) met the inclusion criteria, 30% male and 70% female. 11 patients had at least one oral lesion. The most frequent lesion was recurrent oral ulcers and two specific lesions (lesion macrocheilia and corrugated appearance) were also reported.

CONCLUSIONS: 37% of the sample had at least one oral lesion and the most frequent lesion was recurrent oral ulcers. These results are consistent with reports of various studies, where recurrent aphthous stomatitis was the most prevalent lesion in patients with IBD.
Chemokine receptors in metastasic and non-metastasic squamous cell carcinomas

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Introduction Head and neck squamous cell carcinoma is associated with a high grade of local invasion and high incidence of lymph node regional metastasis, which is directly related to prognosis. Recently, chemokines and its receptors have been involved with tumoral growth and metastasis. The aim of this study was to evaluate the immunohistochemical expression of chemokine receptors in the primary tumour and lymph node of metastatic and non-metastatic squamous cell carcinomas of head and neck.

Methods Thirty-seven primary tumours and lymph nodes from the neck dissection were obtained. Clinicopathological data was collected from patients’ charts. The slides were stain for CCR1, CCR3, CCR4, CCR5, CCR7 and CXCR4. A semiquantitative analysis was performed and the results were analysed statistically.

Results CCR5 (p=0.039) and CCR7 (p=0.023) were more expressed in primary tumours with metastasis than primary tumours without metastasis. CXCR4 (p=0.011) showed a higher correlation between primary tumour and lymph node metastasis. These results were also associated with lower survival rate.

Discussion These findings show the immunohistochemical expression of chemokine receptors in malignant cells and demonstrate the participation of these receptors in the progression and metastasis of the squamous cell carcinoma of the head and neck. We suggest the name of oncochemotaxis for the mechanism that lead the tumoral cells to the lymph node through the expression of chemokine receptors in its surface attracted by chemokines from the lymph node.

Different treatments of denture stomatitis and its impacts over patients

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OBJECTIVE: The aim of this study was to verify and compare the effectiveness of two therapeutic protocols within 14 days and verify its effects over quality of life, halitosis, ph and salivary flow.

METHOD: The sample was composed by 20 patients with 11 for therapeutic group 2 (G2) and 9 for therapeutic group 1 (G1). The age ranged between 38 to 71 years (mean 57±10.4) with no age differences between groups. Patients were selected by convenience and systematically distributed into 2 groups. For G1 the patient received detailed orientation and a non-dental brush for prosthesis cleaning, removal of the prosthesis during sleep and 0.12% chlorhexidine gluconate mouth wash b.i.d. For G2 was applied the same therapy for G1 and an additional of gel formulation of propolis for topical use, q.i.d.

RESULTS: Both interventions showed a significant reduction in the affected area of the palate (G1, p= 0.02/ G2, p= 0.003) however no differences were observed between groups. Taken together, both treatments showed to produce an improvement of the quality of life (p= 0.03).

CONCLUSIONS: This study showed that 0.12% chlorhexidine gluconate plus propolis was not better than 0.12% chlorhexidine gluconate isolate for treatment of DS. This study also observed that both instituted treatments significantly reduced the infection area of DS in the palate, however, it does not cleared it completely. The reduction of the infection due to the treatment may have a positive impact of patient quality of live.
Cytomorphometrical Analysis of Tongue Epithelial Cells in Electronic Cigarettes Users

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OBJECTIVE: To describe the cytomorphometric alterations of tongue epithelial cells in electronic cigarette (EC) users.

METHOD: Thirty-one individuals aged between 18 and 50, comprising 10 smokers (4 males, 6 females), 11 non-smokers (4 males, 6 females) and 10 EC users (8 males, 2 females) were included in the study. The tongue epithelial cells of these individuals were collected with a cytology brush, were stained with PAP and measured cytomorphometrically using Micrometrics SE Premium 4 program. Statistical analysis for cellular diameter (CD), nuclear diameter (ND), cellular area (CA), nuclear area (NC), cytoplasmic area (CPA) and nuclear-cytoplasmic ratio (NCR) between groups was made using Kruskall Wallis and Mann-Whitney tests. All data were tabulated and statistical tests were performed using STATA 12.

RESULTS: Three hundred and eighty cells were examined between all groups. The means of DN, AC, ACN and CPA were elevated in EC users in comparison with parameters in non-smokers and smokers, but this differences were significant only for AN between non-smokers and EC users (p=0.0083). The mean of NCR was greatest for the smokers group, with significant difference with the non-smokers (p=0.0354). However, also a significant difference was found among EC users and non-smokers (p=0.0384).

CONCLUSIONS: The use of EC is effective in creating some quantitative cytomorphometric alterations in tongue epithelial cells, showing differences with the cytological characteristics of non-smoker’s cells. These variations could be similar for changes induced by tobacco smoke, but is necessary more studies for determinate the impact of use electronic cigarettes on the oral tissues and the possibility of generate malignant lesions.

PCA founding in saliva and Chlorhexidine's mixtures.

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OBJECTIVE: To evaluate the presence of solid precipitates of Parachloroaniline (PCA) in binary ultrasonic activated mixtures, between two Chlorhexidine (CHX) concentrations (2 and 0,12 %) with human saliva, in vitro.

METHOD: In vitro chemical experimental study, non stimulated saliva was collected for 5 minutes, samples were divided in two groups (SET B y C) 300 ul saliva with either 300 ul CHX 0,12% or 2 % each one of them divided in two groups (I and II), in 1:1 and 1:2 saliva:CHX proportion. Each sample was agitated for 5 minutes at 37°C and centrifugated at 5.000 rpm. When precipitate was seen, supernatant was discarded and then precipitate was dissolved in 2 mL of acetonitrile, water and formic acid solution. Precipitate’s solution was analyzed in mass spectometer 3200 Qtrap LC-MS/MS by Analyst 1.5 software.

RESULTS: In every mixture there was a colloidal and white-like precipitate’s formation, this precipitate was more evident in mixture IIB and IIC. Molecular species compounds of CHX were detected: 254, 505 and 701 m/z, represented by [M+2H]+, [M+H]+ and [M+H]+, corresponding to ionized species of CHX. There was presence of PCA (C6H6ClN), in all four of the mixtures Saliva/CHX with an m/z of 128 uma corresponding to [M+H]+ species, PCA forms adduct with sodium presented with a molecular species of [M+Na+]+ with an m/z of 153 uma and with a chlorine adduct.

CONCLUSIONS: Solid precipitation of PCA was founded in every mixture, no matter the CHX concentration used; inherent reaction of CHX hydrolysis was verified to be certain also in its mixture with saliva.
Cytomorphometrical Analysis of Oral Mucosa Cells in Electronic Cigarettes Users

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OBJECTIVE: To describe the cytomorphometric alterations of oral mucosa epithelial cells in electronic cigarette users (EC).

METHOD: Thirty-one systemically healthy individuals aged between 18 and 50, comprising 10 smokers (4 male, 6 female), 11 non-smokers (4 male, 6 female) and 10 electronic cigarette users (8 male, 2 female) were included in the study. The oral mucosa epithelial cells of these individuals were collected with a cytology brush, were stained with Papanicolau stain and measured cytomorphometrically using Micrometrics SE Premium 4 software. The parameters measured between groups were cellular diameter (CD), nuclear diameter (ND), cellular area (CA), nuclear area (NC), cytoplasmic area (CPA) and nuclear-cytoplasmic ratio (NCPR). Data were tabulated and statistical analysis were performed with Kruskall Wallis and Mann-Whitney tests with a significance od p<0.05, using STATA 12.

RESULTS: Three hundred and seventy five cells were examined between all groups. The means of CD, ND, CA, NA, CPA were elevated in EC users compared with parameters in non-smokers and smokers, except the values for NCPR, than was highest for non-smokers. The differences were only significant for CA between non smokers and EC users (p=0.00). Also a significant difference was found among smokers and non-smokers for the same parameter (p=0.0243). The value of CPA showed the same performance than CA, showing difference between smokers and non-smokers (p= 0.0084) and between EC users and non-smokers (p= 0.00).

CONCLUSIONS: The use of EC can be associated with cytomorphometc alterations in oral mucosa epithelial cells, showing differences when compared to the cytological characteristics of non-smoker’s cells. These variations could be similar to changes induced by tobacco smoking. New studies are necessary to determinate the impact of use of electronic cigarettes on the oral tissues and the possibility of generate epithelial alterations than would lead to dysplasia.

Immunohistochemical expression of vascular endothelial growth factor in oral squamous cell carcinomas

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OBJECTIVE: Determine the expression of vascular endothelium growth factor (VEGF) by immunohistochemistry in oral squamous cell carcinomas (OSCC) and its association with histopathological differentiation as well as its distribution by age and sex of the patients studied.

METHOD: Observational descriptive transversal study. From the registry of biopsies of the pathologic anatomy service of the Faculty of Odontology of the University of Chile, 22 samples were obtained to OSCC. The OSCC were classified in three groups of study according to the histopathological differentiation: 9 OSCC well differentiated (BD) 8 OSCC moderately differentiated (MD) and 5 OSCC poorly differentiated (PD). Immunohistochemistry technique was applied to the monoclonal antibody VEGF (BSB 6053) and the detection system HRP/DAB (BSB 0003). Five fields per sample were considered (40x objective). Malignant areas with neoplastic epithelial cells were exclusively included, which presented uniform cytoplasmic staining from moderate to intense to brown color; inflammatory and fibroblasts cells were excluded. A VEGF labeling index was obtained for each sample. For the statistics analysis was used the Shapiro-Wilk and the ANOVA test. A P<0.05 was considered significant.

RESULTS: A VEGF labeling index was obtained with an average for VEGF in: BD: 7.07% (SD+-7.75) MD: 14.49% (SD+-12.74) and PD: 9.45% (SD+-3.25). The average age was: 61.5 years and the sex distribution was 16 male 6 female.

CONCLUSIONS: Angiogenesis is crucial for the growth and metastasis of malignant tumours, and various proangiogenic factors promote this process. One of these factors is vascular endothelial growth factor, which appears to be increase in the tumors studied here. These findings suggest that up-regulation of VEGF may play a role in the angiogenesis and progression of oral squamous cell carcinoma. The evaluation of VEGF may be a useful additional criterion for estimating malignancy and growth potential in OSCC.

Supported by Project FIOUCH 13-003 University of Chile.
Cyclo-oxygenase-2 expression and Its Correlation with histopathological differentiation in oral squamous cell carcinomas

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OBJECTIVE: Determine the expression of cyclo-oxigenase-2 (COX-2) by immunohistochemistry and its association with histopathological differentiation as well as its distribution by age and sex of the patients studied.

METHODS: Observational descriptive transversal study. A total of 37 biopsies from the registry of pathology service at the Faculty of Dentistry (University of Chile) diagnosed as oral squamous cell carcinomas (OSCC) were used. All of them were classified in: (16 OSCC well differentiated (WD), 14 OSCC moderately differentiated (MD) and 7 OSCC poorly differentiated (PD). Immunohistochemical staining was done for COX-2 (BSB 5361). The detection system was done HRP/DAB (BSB 0003). From each sample, 5 high power fields were assessed to determine the COX-2 labeling index. Malignant areas with neoplastic epithelial cells were exclusively included, inflammatory and fibroblasts cells were excluded. For the statistics analysis was used the Shapiro-Wilk and the ANOVA test. A P<0.05 was considered significant.

RESULTS: A labeling index was obtained with an average for COX-2 in: WD: 54.21% (SD+/-8.78), MD: 70.11% (SD+/-3.91) and PD: 45.03% (SD+/-24.01). There are significant differences BD, MD and PD was found. The average age was: BD: 61.69 years, MD: 64.14 and PD: 66.43 years and the sex distribution was 25 male and 12 female.

CONCLUSIONS: The previous pathology studies demonstrated that COX-2 is an inducing enzyme observed in several pathological conditions of tissues regulate by growth factors, inflammatory stimuli, oncogenes and tumor promoters. COX-2 expression is higher in moderately and poorly differentiated OSCC. The results of the present study support the role of COX-2 in carcinogenesis and the tumor growth and progression. COX-2 expression represents an important biomarker of prognostic significance that may be used to identify a subset of patients at high risk and to predict patient survival.

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Influence of daytime salivary pH during awake and sleep bruxism.

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OBJECTIVE: Evaluate the influence of daytime salivary pH during awake and sleep bruxing activity on dental students.

METHOD: Forty-seven dental students from third and fourth year during 2015 (17 male, 30 female), aged between 20 and 27, were included in the study. Saliva samples were collected at early morning, during 5 minutes without stimulation, and the measurement of the pH was done by a potentiometer. The grinding patterns during daytime and sleep, were determined by Bruxchecker® foil, and the area analysis was performed by KLONK® software. All data were tabulated and statistical test were performed.

RESULTS: Grinding patterns were clearly identified in all patients during night and daytime with individual differences. Higher mean values of grinding areas were recognized during night-time in the sample group. 38% of dental students showed increased daytime grinding areas than during sleep. There is a tendency between more acidic daytime salivary pH concentration and increased grinding area during daytime and nighttime.

CONCLUSIONS: Grinding activity seems to be developed during day and night-time. Especially during daytime some students showed increased grinding activity which suggest the necessity for clear and precise determination of grinding areas for proper diagnosis and treatment planing. Bruxchecker seems to be a simple tool for identifying grinding areas. So called peripheral factors such as salivary pH seems to influence the grinding activity. Further studies are suggested to determine the real influence of peripheral factors.
Objective: The purpose of this study was to perform a clinical-radiographic and genealogical analysis of a family affected with amelogenesis imperfecta (AI) and to determine the AI subtype.

Method: The affected family was clinical-radiographically analyzed and the genealogy was constructed to diagnose the enamel condition and the possible inheritance pattern.

Results: The clinical analysis showed that the proband presented white-opaque yellowish spots in the enamel of almost all their teeth. The brother and son's proband presented similar clinical phenotype, with alterations mainly in the lower incisors. The niece of the proband showed the same spots in a generalized form, with some areas of enamel structure loss, without altering the adjacent dentin and associated with a class III skeletal. In the x-ray study of the proband, two radiopaque areas of net limits on the right maxillary sinus compatible with antroliths was noted. This finding was also observed in the panoramic x-ray of the brother, who had only a radiopaque area in relation to the right maxillary sinus, but these weren't present in the son neither the niece's proband. The analysis of the genealogy suggests a dominant, autosomal or X-linked inheritance pattern.

Conclusions: The clinical-radiographic study was compatible with a combined clinical phenotype of hypomature AI with mild hypoplasia. Antroliths and AI presence in this family constitute a clinical finding not previously described.

Objective: Describe the oral cancer mortality in the Valparaíso Region between years 2002-2012.

Method: This is a cross-sectional study. Mortality records between years 2002 and 2012 were obtained from National Institute of Statistics (Chile). Raw mortality rates were calculated using the published records on National population by the Ministry of Health.

Results. In the Valparaíso Region Oral Cancer mortality corresponds to the 0.7% from the total of deaths caused by cancer. 61% of them were men and 39% woman (1.5:1). 92% of the subjects were older than 45 years. The tongue and other unspecific areas (19%) were the most frequent location of OC. Followed by the parotid gland (16%) and facial bones (13%). DISCUSSIONS. The Tongue is the most frequent area affected with oral cancer (Riera P. Et al and Ramirez et al). However, the unspecific areas and facial bones are very large areas. Non-specific origin and lack of protocol registration can modify the actual result.

Conclusions The Tongue, parotid gland and facial bones are the most frequent area with Oral Cancer. However, this results can be modified if the anatomical origin is accurately registered.
Objective: To determine the cytotoxicity of copper nanoparticles and copper nanoparticles coated with a chitosan shell.

Methods: Novel chitosan-copper nanoparticles were formulated via the layer-by-layer self-assembly method. Nanoparticle tracking acquisition and dynamic light scattering were employed to characterize the physical properties of the nano-suspension. HEK 293, HUVEC and NIH/3T3 cell lines were cultures and maintained for 72 hours in the presence of incremental concentrations of the different nanoparticles. Viability and proliferation (alamar blue) analysis followed.

Results: Un-coated copper nanoparticles (177.3 ± 75.3 nm) and chitosan-coated copper nanoparticles (241.8 ± 68.8 nm) exhibit a zeta potential surface charge of +14.6 ± 3.1 mV and +28.8 ± 3.3 mV, respectively, demonstrating the successful layer-by-layer build-up of the cationic shell and over-all physico-chemical stability of the nano-suspension. Cell viability and proliferation were found to be highly dose-dependent, throughout the cell lines. Interestingly, the chitosan shell proved significantly efficient in diminishing any of the toxic and anti-proliferative effects seen with the copper nanoparticles.

Conclusions: Novel, spherical, stable, positively-charged and non-toxic chitosan-copper nanoparticles, suitable for localized drug delivery applications resulted. The anti-bacterial property of copper nanoparticles is attractive for oro-dental indications; a subject of ongoing investigation and development at BioMAT’X.
Clinical Comparison of treatments in decrease of xerostomia in patients

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Objective: Evaluate the increase of salivary flow and the decrease of xerostomia severity with two treatments, topical sialogogue spray containing 1% of malic acid (Xeros Spray®) and other with citrus acid (artificial salivary).

Method: This research took the form of a triple-blind, randomized clinical trial. Thirty participants with dry mouth were divided randomly in two groups: One group with topical sialogogue spray containing 1% of malic acid and Xylitol, while the second group with a salivary substitute with citric acid and carboxymethylcellulose. For both groups, the sprays were applied on demand during two weeks. The xerostomia inventory (XI) was used to evaluate dry mouth symptoms. Oral Schirmer test was used to evaluate unstimulated and stimulated salivary flow rates, before and after application, were measured.

Results: For the Xeros Spray®, salivary flow rate increased between the first and third session by 47.53 %, while for the artificial saliva increased by 28.43 %. Among the first session and the last, Thomson’s Survey total score declined to 16.9% using malic acid, whereas using citric acid fell 26.3 %.

Conclusions: Regarding salivation, both increase the salivary flow, but despite the malic acid is slightly higher, there is no significant difference between them. As the severity of xerostomia, both the decrease significantly, and although the artificial saliva reduces it more, the difference with Xeros Spray® isn’t significant.

There is a weak reverse correlation between salivary flow rate with the total score by the xerostomia inventory.

A novel irrigant to prevent p-chloroaniline formation into root canal

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OBJECTIVES: To determine ex vivo if intermediate irrigation with 70% Ethanol between 5% NaOCl and 2% Chlorhexidine (CHX) irrigation under endodontic protocol prevents PCA (Parachloroaniline) formation into the root canals.
- To determine NaOCl, EDTA, Chlorhexidine and intracanal formed Parachloroaniline concentrations during chemomechanical preparation when using 70% Ethanol (experimental group) or Saline solution (control group) as intermediate irrigation.
- To compare formed PCA concentrations when using either Saline solution or 70% Ethanol as intermediate irrigation during chemomechanical preparation.

METHOD: 30 single-rooted extracted teeth were randomly assorted into experimental (n=20) or control (n=10) groups. Root canal preparation up to K-Flexofile #35 was performed (crown-down technique) using 5% NaClO as irrigation. Then, irrigation by either 70% Ethanol or Saline solution was performed before and after the 10% EDTA irrigation step. A rinse with 2% CHX was done prior the placement of 2% CHX medication. The root canal content was collected at the end of every irrigation phase (total=13 samples). NaOCl, EDTA, CHX and PCA concentrations were determined by spectrophotometry. The results were analyzed using a statistical test (Mann-Whitney) comparing irrigant concentrations and PCA formation between both groups.

RESULTS: NaOCl concentration during root canal instrumentation was 4,737% in the control group and 4,853% in the experimental group. Before 2% CHX medication, NaOCl concentrations were 0,00308% (control group) and 0,00229% (experimental group). 2% CHX concentration were similar for both groups. Statistical differences were found between PCA concentration of 0,00345% (control group, Saline solution) and 0,00233% (experimental group, Ethanol 70%) p<0.05.

CONCLUSION: Root canal irrigant concentrations drop during the irrigation phases. NaClO remnants form PCA. The use of 70% Ethanol as intermediate irrigation diminish PCA formation during root canal medicated.

Investigation part of FIOUCH 13-015 Project.
Objective: The aim objective was assessment the progressive bone loss (BR) using radiographic parameters to 3-years in osseointegrated implants (OI) with grafts techniques.

Materials and methods: This study was descriptive and retrospective. The selection was 297 patients intervened surgically with OI and different BR between 2007 and 2012 in the postgraduate of faculty Dentistry, University Andres Bello, Santiago. The patients were recalled after 3-years and were evaluated by calibrated operator and radiographic measures from bone crest to OI neck to determinate exposed pitches (EP). Radiographic evaluations were with periapical shots measured to the nearest millimeter with a Hu-Friedy periodontal probe, calculated for each OI and grafting site. The examination radiographic was performed in standardized intra-oral periapical radiographs. All radiographs were taken using the long cone paralleling technique and plastic X-ray holder. Other recorded patient’s information were: gender, smoking habits, hygiene, OI position and graft type. All privacy information was protected employing only codes and numbers.

Results: Total sample universe, 84 subjects with 101 OI were evaluated. From this sampling, 75% were Female and 25% male, the most important age range was 40-59 years old. 2-4 EP was the most prevalent BR index range (46%) with heterologous substitutes employing. Posterior OI and grafts placement, and male patients had a mild RB of 0-2 EP (50% and 56%, respectively). The severe RB (4-6 EP) was observed in patients with poor hygiene (49%) and pharmacotherapy (28%).

Conclusions: With the limitations this study, there was 46% of cases with 2-4 EP radiographically measured in OI and grafting procedures, and in this cases heterologous grafting were the most common choice.

Objective: To evaluate the survival rate of isolated periodontal teeth from patients treated at the postgraduate periodontics and under supportive periodontal therapy.

Methodology: 20 medical records of patients diagnosed with chronic periodontitis treated at the postgraduate periodontics who were under supportive periodontal therapy (TSP). The presence of isolated periodontal teeth, distribution, presence of antagonist tooth, gingival recession (RG), probing depth (PS), clinical attachment level (NIC), mobility, both basal and TSP, rate survival at 3 years and the cause of tooth extraction was evaluated.

Results: There were 43 isolated periodontal teeth isolated in 20 patients, with an average 56 years of age, with a posterior distribution (98%), mandibular (63%), with antagonist teeth (79%), RG = 3.2 mm, PS = 2.4 mm, NIC = 3.8 mm during TSP and mobility grade 1. The survival rate is 91%, and the cause of tooth extraction is the change in the prognosis to hopeless.

Conclusions: the maintenance of isolated periodontal teeth during the supportive periodontal therapy enables retention of the dentition at least 3 years.
Periodontal treatment needs in adolescents 12 years old of Higuera

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OBJECTIVE: To determine the periodontal treatment needs and oral hygiene among 12 years old teenager, living in the Higuera, Chile 2016.

MATERIALS AND METHODS: A cross-sectional, descriptive, observational study was performed. It evaluated 12 years old teenagers registered in the selected school in the Higuera, Chile 2016 between April and May. The sample consisted of 50 teenagers, who met the inclusion criteria. To determine the treatment needs periodontal it was used the community periodontal Index of treatment Needs (CPITN) and the oral hygiene was evaluated by using the simplified Oral Hygiene Index (OHI-S). Test T was applied assuming a statistical significance level p < 0.05. Patients were evaluated by a previously calibrated examiner (K=0.84) through a visual clinical examination to determine the need for periodontal treatment and the oral hygiene index. Date were transferred to a Microsoft excel and statistical analysed.

RESULTS: Of the total simple, 56.7% of the participants were males. The average values for the CPITN and OHI-S were 1.1 ± 0.9 and 0.7 ± 0.5 respectively. There were no statistically significant differences between both genders (p < 0.05)

CONCLUSIONS: 33.3% of adolescents aged 12 years old belonging to the town of the Higuera need periodontal treatment. Periodontal disease detection must be considered as an important part of the integral dental examination in children and adolescents.

CCR7 role in ectopic lymphoid-clusters formation during periodontitis

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CCR7 receptor and its ligands play a key role during lymphocyte and dendritic cell homing to secondary lymphoid organs, thus promote a proper adaptive immune response by regulating the antigen presentation process. Dysregulation of immune cell migration alters the location of immune cell infiltrates, inducing ectopic lymphoid-like clusters in different human inflammatory diseases. CCR7, CCL19, CCL21, and CXCL12 have been largely associated with ectopic lymphoid structure formation by promoting naïve cell migration to peripheral inflamed-tissues, where naïve cells contact primed antigen-presenting cells. This study aimed to analyze CCR7, CXCR4, CXCL12, CCL19, and CCL21 production, along with CCR7 naïve T-helper lymphocyte detection, in periodontal tissues from healthy or periodontitis-affected individuals in order to elucidate the role of CCR7 in periodontal lymphoid-cluster formation.

Methods: From gingival samples obtained from healthy or moderate-to-severe chronic periodontitis individuals, total cells were isolated using enzymatic digestion and then analyzed by flow cytometry using the following monoclonal-antibodies: anti-CD4, CD25, CD45RA, CD45RO, RORC2, Foxp3, and CD197 (CCR7). In addition, the mRNA expression for CCR7, CXCR4, CXCL12, CCL19, and CCL21 was quantified by qPCR. Accordingly, CCL19, CCL21, and CXCL12 secretion was quantified from gingival crevicular fluid samples by ELISA. Finally, CCR7 was detected by western-blot and localized by immuno-fluorescence.

Results: Higher levels of CCR7, CXCR4, CCL19, CCL21, and CXCL12 were detected in periodontitis compared with healthy individuals. Additionally, the number of CCR7 naïve T-cells and CCR7+RORC2+ memory T-cells increased in periodontitis patients. CCR7 was localized broadly in the gingival connective tissue and particularly clustered around blood vessels.

Conclusions: Higher levels of CCR7 naïve T-cells were detected in periodontal tissues from periodontitis versus healthy individuals and this increment was associated with local CCL19, CCL21, and CXCL12 production. Hence, CCR7 plays a possible role in periodontal lymphoid-like structure formation.

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Assessment of Reliability of a Self-Report Questionnaire for Periodontal Disease

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**Objectives:** To develop and assess the reliability of a self-report questionnaire of periodontal disease in a teenage population between 12 and 18 years.

**Method:** After reviewing the available literature, from the self-report questionnaires found there were selected and developed items focused on establishing the presence of gingival inflammation for a teenage population between 12 and 18 years. The content validity of the initial questionnaire was established by consultation of an expert panel (n=5). Then, it was pilot tested (n=20), and, afterwards, a focus group was conducted among its participants to culturally adapt the questionnaire. This final version was applied in the validation sample (n=178), where the reliability of the questionnaire was assessed by Cronbach’s Alpha, to test its internal consistency, and Cohen’s Kappa, to assess its temporal stability by measuring the level of agreement between the repeated application of it to the 30% of the sample.

**Results:** The final questionnaire covered three main subjects, such as sociodemographic factors, habits and self-report measures focused on the acknowledgement of signs and symptoms of disease (“Do your gums bleed after toothbrushing?”, “In the last month, have you noticed your gums reddish and/or swollen?”, “How would you rate your gum health?”, “How would you rate your toothbrushing?”, “How many times a day do you brush your teeth?”). It reached a Cronbach’s alpha of 0.730. The values obtained by each of the items for Kappa ranged from 0.410 to 0.769.

**Conclusions:** The questionnaire presented an acceptable internal consistency, with a temporal stability from moderate to substantial; therefore, it’s represents a reliable source of information. Supported by grant FIOUCH 13009.

Validation of a periodontal health self-reported questionnaire among adolescents.

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**OBJECTIVE:** To validate a periodontal health self-reported questionnaire in adolescents from the province of Santiago, in order to propose its use for obtaining epidemiological data at lower cost.

**METHODS:** A previously validated questionnaire was applied to 139 adolescents aged from 12 to 18 years, including 5 questions related to self-reported periodontal health as well as other questions about habits, risk factors and sociodemographic factors. Subsequently, calibrated dentists performed clinical tests using the simplified basic periodontal examination with gingival index registration. The predictive validity for two periodontal health states was determined: (1) need for simple periodontal treatment (NSPT=code 3) and (2) gingivitis (G), adolescents with ≥ 10% of periodontal sites examinated with bleeding at exploration (code 2 at gingival index). It was assessed using logistic regression by sensitivity (SS), specificity (SP) and area under the ROC-curve.

**RESULTS:** 5.7% of the tested adolescents were healthy (code 0). From diseased people, 7.9% required NSTP and 58.8% were G. The model predictive for NSTP, with a ROC-curve=0.85 (100% SP), which included the following variables: gingival bleeding during brushing adjusted for gender, type of educational establishment, orthodontic treatment and frequency of visits to the dentist. The predictive model for gingivitis included all of the above variables.

**CONCLUSIONS:** The presence of bleeding during brushing, seems to be a good predictor for assessing the presence of gingivitis or need for simple periodontal treatment in adolescent population and might justify its usefulness in epidemiological studies and preventive interventions.

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Efficacy of potassium nitrate and arginine in dentin hypersensitivity treatment.

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Aim: To compare the clinical efficacy of 8% arginine/1450ppm sodium monofluorophosphate (D1) and 5% potassium nitrate/2500ppm sodium fluoride (D2) dentifrices in the treatment of dentin hypersensitivity (DH) at baseline and at four-week follow-up.

Material and methods: Double-blinded, parallel-design, randomized controlled clinical trial. Thirty four volunteers attending at the Faculty of Dentistry, University of Chile, with DH and a visual analog scale (VAS) score ≥4 at least in two anterior and/or premolar teeth, were selected and randomized into two treatment groups: T1 group (16 patients): D1 dentifrice and T2 group (18 patients): D2 dentifrice. DH was assessed in both groups measuring the response to evaporative (controlled air) and thermal (dichlordifluormethan) stimuli through mean VAS score at baseline and at four-week follow-up. Intra and inter-grupal DH reductions were analysed and compared using paired and unpaired Student’s t test in Stata® V11 program.

Results: Both dentifrices showed significant reductions in mean VAS scores at four-week follow-up. Group T1 (Arginin) reduced DH from 5.03 + 1.23 at baseline to 2.60 + 1.27 at 4-week, (p<0.05), while group T2 (Potassium nitrate) changed from 4.73 + 1.51 at baseline to 2.71 + 1.17 at 4-week (p<0.05). No statistical differences were found in mean VAS scores between baseline and at 4-week follow up. Nine and ten patients from T1 and T2 groups respectively, changed from moderate to mild pain at the end of the study.

Conclusions: Both dentifrices were effective in reducing the symptoms of DH. There was no difference in the efficacy of both dentifrices in the reduction on DH. Funded by FIOUCH 13-013

Immunological effect of Lactobacillus rhamnosus in the treatment of chronic periodontitis

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OBJECTIVE: The objective of this study was to evaluate the administration effect of Lactobacillus rhamnosus SP1 in patients with chronic periodontitis treated with scaling and root planing (SRP), in periodontal clinical parameters associated with levels of Interleukin-8 (IL-8), Interleukin-17 (IL-17) and Betadefensin-3 (hBD-3) present in the crevicular gingival fluid (CGF), compared to a placebo.

METHOD: Randomized, double-masked, placebo-controlled trials were conducted. Twenty-eight patients with chronic periodontitis were divided into 2 groups. All patient were treated with SRP, one group received an oral solution with probiotic powder (SRP + probiotic, n=14) and the other a placebo (SRP + placebo, n=14). Powder for oral suspension containing L. rhamnosus SP1 (Macro Food S.A.) or placebo was ingested after night teeth brushing during 3 months. Clinical parameters recorded were: probing depth (PD), clinical attachment level (CAL), plaque index (PI) and bleeding on probing (BOP) at the beginning and end of the intervention. Levels of IL-8, IL-17 and hBD-3 were obtained from CGF using Periopaper strips (ProFlow, Amitville, NY, EE.UU.), at the beginning and end of the intervention and analyzed using an ELISA test.

RESULTS: No statistically significant differences were observed between groups for any parameters evaluated at baseline. In both, the probiotics and placebo groups, a significant decrease (p<0.05) was observed in PD, PI and IL-8 levels by comparing baseline and 3 months after the intervention. However, no significant differences were registered between the two groups after the intervention.

All patients entering the study completed it. No compliance problems were noted and no adverse effects were mentioned by patients.

CONCLUSION: Oral administration of Lactobacillus rhamnosus SP1 has a similar effect on the improvement of clinical and immunological parameters when it is compared to a placebo group, without generating an additional benefit to SRP.

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Humoral immune response and endotoxemia in Asymptomatic Apical Periodontitis

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Aim: To determine humoral immune response and endotoxemia in patients with Asymptomatic Apical Periodontitis (AAP) with and without endodontic infection with Porphyromonas endodontalis and Porphyromonas gingivalis versus healthy controls

Methods: The study population comprised 17 patients with AAP between 18-34 years of age, with no other diseases or cardiovascular risk factors and 24 healthy controls from volunteers consulting at the School of Dentistry, University of Chile. Serum samples were taken from all the participants and bacterial root canal samples were taken only from AAP group. Identification of isolates of P. endodontalis and P. gingivalis recovered from root canal samples was carried out by specific bacterial cultures and PCR. Endotoxin and anti-P. gingivalis and anti-P. endodontalis immunoglobulin (Ig)G and IgA were measured by Limulus Amebocyte Lysate and multiserotype enzyme-linked immunosorbent assay, respectively. Data were analyzed with Stata v11 software, and statistical significance was considered if p< 0.05.

Results: In patients with AAP, P. gingivalis and P. endodontalis were detected in 11.8% and 29.4% of the samples, respectively. There was a higher level of endotoxin in serum of patients with AAP compared to controls, but this difference was not statistically significant 2.14(1.62) and 2.02(0.89) EU/ml respectively (p=0.57). Significantly lower endotoxemia and higher anti-P. endodontalis IgG levels (p=0.002 and p=0.0047), respectively were found in serum from AAP patients with P. endodontalis infection versus no infection.

Conclusions: Detection of P. endodontalis in root canal samples of patients with AAP was higher than P. gingivalis. No difference in endotoxin or antibody levels was detected between patients with AAP versus healthy controls. Higher levels of P. endodontalis-specific IgG were detected in AAP patients endodontically infected with P. endodontalis versus those in which the bacteria was not detected. Our results suggest that P. endodontalis may induce the humoral immune response as part of low grade systemic inflammation.

Microvesicles as biomarkers in diabetes type 2 and periodontal patients.

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OBJECTIVE: Isolation and characterization of microvesicles (MVs) from plasma and gingival crevicular fluid (GCF) in patients with type 2 diabetes with different degrees of metabolic compensation and periodontal disease; before and after treatment for diabetes and two different modalities of periodontal treatment: conventional and full mouth disinfection.

METHOD: 10 patients with periodontal disease and type 2 diabetes with poor metabolic compensation (glycosylated hemoglobin >7.5%) and 10 other patients with periodontal disease and type 2 diabetes with lower levels of glycosylated hemoglobin (<7.5%) were selected to participate in this study. Plasma and GCF were taken before they receive any treatment and after treatment at 3 and 6 months; as well as glycosylated hemoglobin tests. All participants were assigned randomly a periodontal treatment: conventional or full mouth disinfection. The group of patients with decompensated diabetes received treatment as their attending physician indicated. The MVs were isolated using Exoquick, and characterized by electronic microscopy, western blot, nanotracking particles analysis (NTA), and Elisa for CD63.

RESULTS: Preliminary results demonstrated the presence of MVs isolated with Exoquick in GCF and plasma samples. Western blot analysis showed a typical marker of MVs known as CD63. The electronic microscopy showed typical morphology of MVs, and the size distribution was from 116 nm to 154 nm measured by NTA. Data showing difference in quantity or size of MVs is not yet available, but it is expected to show a larger concentration of MVs in patients with decompensated diabetes versus compensated diabetic patients; as well as patients before and after periodontal treatment.

CONCLUSIONS: The use of MVs isolated from GCF and plasma samples could become an important diagnostic tool in patients with type 2 diabetes and periodontal disease, in order to keep tracking of their systemic inflammatory status.
Longitudinal and immediate effect of Kundalini Yoga in the salivary levels of cortisol and activity of alpha amylase, and its effect on the perceived stress between the assistants to classes performed in the Faculty of Dentistry, University of Chile

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OBJECTIVE: To determine the Kundalini Yoga effect, immediate and after three months of regular practice, on the perception of the psychological stress and the salivary levels of cortisol and alpha amylase activity between the assistants to classes performed for 3 months and a group that do not practice any type of yoga.

METHODS AND MATERIAL: The population studied consisted of 26 people between 18 and 45 year old; 13 assistants to KY classes performed in the Faculty of Dentistry, University of Chile and 13 control subjects. Salivary samples were collected Enzyme-linked immunosorbent assay was performed to quantify cortisol and kinetic reaction test to determine alpha amylase activity. Perceived Stress Scale (PSS) was applied at the begging and at the end of intervention. Statistical analysis was performed using Stata v11.1 software. A statistical significance was considered when p-value <0.05

RESULTS: KY practice has an immediate effect on salivary cortisol. The activity of alpha amylase did not have significant changes. A significant decrease of perceived stress in the study group was found.

CONCLUSIONS: KY practice shows an immediate effect on salivary cortisol level, and on perceived stress after 3 months of practice. KY might be a useful tool in the complementary treatment of pathologies that are directly related to high levels of stress as cardiovascular diseases, hypertension, immune system disorders, bruxism and periodontal disease, insomnia, depression and also in diabetes and chronic diseases in general.

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PISA classification comparison with the AAP Chronic Periodontitis Classifications

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OBJECTIVE: To compare the Periodontal Inflamed Surface Area (PISA) classification for periodontitis with American Academy of Periodontology (AAP) 1999 for Chronic Periodontitis regarding extension and severity.

METHODS: A random sample of sixty-six clinical charts, non-smokers patients were selected. Periodontal diagnosis was obtained based on AAP (1999) criteria for chronic periodontitis, extension and severity were considered separately. Afterwards, the same sample were classified with PISA excel sheets, obtaining PISA, Periodontal Epithelial Surface Area (PESA) and Attachment loss surface area (ALSA). Statistical analysis was performed using Student's T-test and Mann-Whitney U test.

RESULTS: Statistically significant differences were found in extension values for PISA (p=0.0031), PESA (p=0.0012) and ALSA (p=0.0012) in Localized and Generalized Periodontitis using both classifications. The periodontitis severity analysis, did not reach statistical significance in PESA (p=0.16) or PISA (p=0.64) values, but a statistically significant difference in ALSA values was founded (p=0.006).

CONCLUSIONS: PISA classification and AAP Classification can be complementary for characterization of extension of the disease, but only ALSA is useful to assess the periodontal severity.
Fibrin-Rich Plasma as an adjunct to surgical periodontal therapy

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OBJECTIVE: The aim of the present study is to assess the effectiveness of fibrin-rich plasma (FRP) in the treatment of sites that still show active periodontal disease after non-surgical conventional therapy, when applied as an addition to the traditional surgical treatment of periodontitis (open flap debridement).

METHOD: A randomized, double-blind clinical trial was performed with 2 parallel groups of 13 sites each, presenting a diagnosis of chronic periodontitis that hadn’t been resolved with non-surgical treatment. The exclusion criteria used to determine site selection was: patients between the ages of 20 and 74, not pregnant, ASA II, non-smokers, without sexual transmitted disease, immunosuppression, mental illness and a history of bad attendance. The surgical treatment comprised the realization of an open flap debridement and the application of FRP in sites that were chosen randomly. Periodontal parameters such as clinical attachment level (CAL) and probing depth (PD) were measured at baseline, 30 days later and 60 days later. Parameters where compared within the same group and between the 2 parallel groups. Statistical analysis was performed using Student’s T-test.

RESULTS: Both treatment methods (conventional and FRP) showed significant changes in PD at 30 and 60 days when compared with baseline (p< 0,05). PRF group showed a significant improvement when CAL was compared at 30 days (p=0.0005 vs p=0,23), however, both groups presented significant differences at 60 days. (p<0,05). There are no significant differences between the 2 groups in PD reduction at 30 and 60 days (p=0,87 and p= 0,42), and CAL gain at 30 and 60 days (p=0,23 y p=0,52).

CONCLUSIONS: Within the limits of this study, we can conclude that the addition of FRP in periodontal surgical therapy does not improve CAL and PD parameters, measured at 30 and 60 days, when compared with flap debridement alone.

Atorvastatin and Periodontitis: Exploring T lymphocytes.

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OBJECTIVE: T lymphocytes are immune cells involved in periodontal disease. The aim of this study is to evaluate the in vitro effect of a toothpaste medicated with Atorvastatin on the proliferation and viability of murine T lymphocytes.

METHOD: T lymphocytes were obtained from the spleen of C57BL/6 mice. Cell Trace Violet (CTV) was used to evaluate proliferation. The cells were cultured for 3 days with Concanavalin A and different concentrations of the experimental solutions were applied at the beginning of the culture or 24 hours later (paste with and without Atorvastatin, and a pure solution of Atorvastatin). Staining with Anti-CD3-APC and Propide Iodide was done before analysis via flow cytometry.

RESULTS: Paste without Atorvastatin did neither affect the viability nor the proliferation of T lymphocytes. Interestingly, when the Atorvastatin was applied at the beginning of the cell culture, viability decreased significantly, and so did proliferation. On the other hand, when the drug was applied 24 hours later, only proliferation decreased; in a dose-responsive manner.

CONCLUSIONS: Our preliminary findings demonstrate that Atorvastatin, for oro-dental applications, should be handled with care. Ongoing efforts at BioMAT’X seek to develop a release-controlled delivery system to localize the drug to the site of administration, in order to enhance clinical safety and efficacy.
Low molecular weight hyaluronan as damage signal during periodontitis.

Periodontal Biology Laboratory, Faculty of Dentistry, Universidad de Chile.

**Aims:** Hyaluronan (HA) is a polysaccharide that plays different physiological and pathological roles depending on its molecular weight. In its native form, HA is a high molecular weight polymer (HMW-HA); however, under certain conditions, such as tissue injury and inflammation, HA is transformed into low molecular weight (LMW-HA) molecules. During periodontitis, tissue destruction causes an increment in the periodontal levels of LMW-HA, which in turn acts as damage-associated molecular pattern (DAMP). Thus, LMW-HA could play a role in the induction of adaptive immune response and chronicity of the disease. Therefore, this study was aimed to determine the LMW-HA levels detected in periodontitis patients, before and after the periodontal treatment, and to analyze the variability in the immune response on LMW-HA-induced dendritic cells.

**Methodology:** Gingival crevicular fluid samples were collected from 8 healthy individuals and 15 chronic periodontitis patients, before and after non-surgical periodontal treatment, and total LMW-HA levels were quantified by ELISA. Furthermore, human monocyte-derived dendritic cells were stimulated with 20KDa LMW-HA at 25, 50, or 100 ng/mL and the mRNA expression levels for IL-4, IL-6, IL-12p35, TNF-α, and TGF-β were determined by qPCR.

**Results:** Higher levels of LMW-HA were detected in periodontitis patients compared with healthy controls. No significant differences were, however, detected in periodontitis patients before and after periodontal treatment. When dendritic cells were stimulated with LMW-HA, in a dose-dependent manner, higher expression levels of TNF-α and IL-12p35 mRNAs were detected as compared with non-induced cells.

**Conclusions:** During periodontitis, higher levels of LMW-HA were detected; however, these increased levels did not show changes after non-surgical periodontal treatment. LMW-HA induces and increment in the production of pro-inflammatory cytokines on induced dendritic cells.

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Increased cytokine expression triggered by Hyaluronan-fragments on infected dendritic cells

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**Introduction:** Hyaluronan (HA) is a negatively charged high molecular weight (HMW) glycosaminoglycan, which is ubiquitously distributed in the extracellular matrix of different tissues. During inflammation and tissue destruction, HMW-HA can depolymerize into lower molecular weight (LMW-HA) fragments, which in turn act as damage-associated molecular pattern (DAMP). In fact, during periodontitis, an increment in the periodontal levels of LMW-HA are detected, and these increased levels are associated with the up-regulation of pro-inflammatory cytokines on induced dendritic cells (DCs). In this context, Porphyromonas gingivalis and Aggregatibacter actinomycetemcomitans have been proposed as potent inductor of host immune response by activating periodontal DCs. Thus, LMW-HA could play a role in cytokine expression on P. gingivalis or A. actinomycetemcomitans-infected DCs. In this study, we hypothesized that LMW-HA trigger an increment in the cytokine expression on P. gingivalis or A. actinomycetemcomitans-infected DCs.

**Methodology:** Monocyte-derived DCs were obtained from healthy donors, pulsed at days 3 and 5 with 20KDa-LMW-HA (25-100 µg/mL) and at day 7 infected with P. gingivalis or A. actinomycetemcomitans. Non-pulsed infected-DCs were used as controls. Non-pulsed non-infected-DCs were used for comparisons. The mRNA expression levels for IL-1β, IL-6, IL-12, IL-23, IFN-γ, and TNF-α were quantified by qPCR.

**Results:** In a dose-dependent manner, higher expression levels of IL-1β, IL-6, IL-12, IL-23, IFN-γ, and TNF-α were detected in LMW-HA-pulsed P. gingivalis or A. actinomycetemcomitans-infected DCs as compared with non-pulsed DCs.

**Conclusions:** LMW-HA induces an increment in the production of pro-inflammatory cytokines on infected-DCs.

Funding: FONDECYT 1140904.
Periodontal Status of Electronic Cigarettes Users

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OBJECTIVE: To describe the periodontal status of electronic cigarette (EC) users.

METHOD: Thirty-one systemically healthy individuals aged between 18 and 50, comprising 10 smokers (4 male, 6 female), 11 non-smokers (4 male, 6 female) and 10 EC users (8 male, 2 female) were included in the study. Periodontal Status including Periodontal Epithelial Surface Area (PESA), Periodontal Inflamed Surface Area (PISA), Attachment Lost Surface Area (ALSA) indexes, number of affected sites with probing depth ≥4 mm with attachment lost (NAS), O’Leary index for dental plaque (OLI) and Bleeding Index (BI) data was analyzed. Data were tabulated and statistical analysis were performed with One Way ANOVA, Kruskall-Wallis and Mann-Whitney tests with a significance od p<0.05, using STATA 12.

RESULTS: OLI and BI showed no differences between groups, however, the bleeding index was less for the EC uses. The EC uses had the highest values for PISA, PESA, ALSA and NAS with significant differences between this group and non-smokers in results of PESA (p= 0.0044), PISA (p=0.0021), ALSA (p= 0.0033) and NAS (p= 0.0192). The results were similar for smokers and EC users.

CONCLUSIONS: The use of EC seems to generate clinical alterations on the periodontal status, suggesting that this dispositive is not completely safe for the periodontal health. The results showed that values for PISA, PESA, ALSA and NAS were similar for smokers and EC users, with clear differences between both groups and non-smokers.

Spectrophotometric identification of shade relationship among permanent anterosuperior teeth

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OBJETIVE: Document the color relationship between the antero superior permanent teeth. Identify the most frequent natural tooth colors using the Easyshade Compact (Vita -Zahnfabrik) spectrophotometer according to the 3D Master System.

METHODS: The L"C"h"a"b" values of the middle third of the facial surface of natural maxillary central incisors, lateral incisors and canines were determined in 100 volunteers, (51 male and 49 female) aged between 18-35 years, by the VITA Easyshade Compact spectrophotometer. Natural tooth color was recorded using the 3D Master System nomenclature. Correlations and differences among the corresponding color coordinates of each type of teeth were determined. The same evaluator performed all measurements. Exclusion criteria: No history of tooth whitening. No restorations including facial composites, veneers, crowns. No intrinsic staining present. No visible caries or excessive erosion/wear. The program used for the present descriptive statistical analysis of the results was XLSTAT.

RESULTS: Preliminary data from 100 volunteers demonstrate the following trends: (1) The color of 37,8% of the participants of this study had a match within the 26 colors of the 3D Master Toothguide, while 62,2% presented intermediate shade colors that were not physically represented in the toothguide. (2) The most frequent color among all the participants was 3M1 (9,33%), followed by the 3L1.5 (5,83%) . (3) The most frequent value was 2.5 (29,5%) and 3 (29,16%). (4) The most frequent hue was L (53,5%), followed by M (45,16%). (5) 13% of the participants have the same hue in the six anterior teeth, 31% have only the same hue in the incisives.(6) The L* maxillary central incisor in male (78,95) were slightly lower than female (80,57) but not statistically significant. (7) The cervical area was the highest L* area in a tooth. (8) The value, hue and chroma of both central incisors was the same in 55% of the participant.

CONCLUSION: The most frequent color among all the participants was 3M1 (9,33%). It appears that the hue, value and chroma could not be the same in the homologous teeth. The 3D Master toothguide has not intermediate values so we could only find one third of the patients tooth shade. The spectrophotometer is a useful instrument to shade intermediate values.
LPS and antibiotic sensitivity of *P. gingivalis* and *P. endodontalis* in Asymptomatic Apical Periodontitis

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**OBJECTIVE:** To determine the variability of *Porphyromonas endodontalis* (Pe)’s endodontic isolates based on their morphology, lipopolysaccharide (LPS) structure and susceptibility to antimicrobial agents.

**METHODS:** Pe clinical isolates (n=3, E1, E3 and E4) were obtained from positive periapical exudates from teeth diagnosed with asymptomatic apical periodontitis (PAA; n=23). Macromorphological characterization in solid and liquid media and cell surface analysis through scanning electron microscopy were performed. In addition, LPS electrophoretic profiles were characterized in SDS-PAGE gels stained with silver nitrate and compared to the ATCC 35402 reference strain. Finally, susceptibility was evaluated against chlorhexidine, sodium hypochlorite, polymyxin B (PMB) and amoxicillin, by sensitivity testing.

**RESULTS:** Pe 35402 and 1E isolate showed a similar, rather smooth surface, consistent with a complete LPS. 3E isolates showed surface exhibiting irregular protrusions and a truncated O antigen (OAg), while 4E isolates showed patterns of regularly distributed surface protrusions and only high molecular weight chains-compatible molecules in their OAg. These structural differences were associated with changes in their sensitivity to systemic and topical antimicrobials of endodontic use. Particularly, 3E showed greater resistance to amoxicillin and increased susceptibility to PMB, relative to the reference strain (p <0.05).

**CONCLUSIONS:** Pe endodontic clinical isolates exhibited structural variability with respect to the bacterial surface and LPS profiles, particularly in the OAg region, as well as different antimicrobial susceptibility when compared to the reference strain.

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Dentoalveolar Height in older adults for occlusal vertical dimension determination.

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It has been recommended a 22 mm distance from the fonsix (mucolabial reflection) to the edge of the maxillary central incisor (18 mm for the mandibular) to make occlusion rims for edentulous patients rehabilitation. These measures have not been validated in subsequent studies. Objective: To compare Dentoalveolar Height (DAH) in older adults with recommended values. Material and Methods: Cross-sectional study in Chilean men and women aged ≥ 50 years. We excluded individuals who had previous dental treatment that may have changed the evaluated references. Intraoral examination was performed by an undergraduate student inter-intraexaminer calibrated with a skilled operator. Mucolabial reflection was marked with an aniline pencil (Faber-Castell®), measurements were recorded from the marked line to lateral incisors edge midpoint, canine cusp and first premolars vestibular cusp (right and left, upper and lower), and the distance measured using an electronic digital caliper (Redline Mechanics®). Each value in millimeters (two decimals) was transferred to an Excel spreadsheet (Microsoft Office, 2010). Normal data distribution was analysed by Shapiro Wilk test. Mean, SD, minimum and maximum values for each tooth were obtained. We compared right and left sides, gender, and DAH values of each tooth to the reference values using t test (Stata Statistical Software and Data Analysis software 13.1®).

**Results:** DAH values are presented by tooth and gender.

**Conclusions:** There are no differences between right and left sides for men and women, with the exception of the upper canine in women. There are differences between men and women for upper right and left canines, upper right and left first premolars and lower left lateral incisors, canines and first premolars. Recommended values seems exaggerated for all the studied teeth, with the exception of the maxillary and mandibular canines in men.
Objective: The aim of this study was to determine the total color difference of the 16 shades of the Classical VITA shade guide, comparing data obtained in the CIELAB color space from each of the shade tabs using a photographic-computational method.

Method: Using a standardized protocol, digital photographs were taken from 11 VITA shade guides from different batches and manufacturing date. At the moment of taking the photograph, the shade tabs were positioned on an 18% neutral gray card, which allowed for further photo processing. Then, in order to determine its RGB value, each image was analyzed using Adobe PhotoshopTM. These values were transformed into CIELAB values using the online converter EasyRGBTM. Statistical analysis was done using SPSS 21. The mean value of each shade was compared to B1 and ordered in an ascending sequence according to their color difference. Total color difference ($\Delta E$) was calculated using the formula $\Delta E^* = [(\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2]^{1/2}$

Results: Each shade from the VITA guide differs in variable degrees from the shade B1, which is considered to be the clearest shade. These results allowed to reorder the shade guide in a more logical way with respect to B1 shade from the closest in color to the furthest: B1, A1, C1, B2, A2, D2, C2, A3, D3, B3, D4, C3, B4, A3.5, A4, C4. At the same time, it was observed that the total color difference between every neighbor pair of shades was not uniform and their values vary between 1.53 and 5.68.

Conclusions: After obtaining the coordinates CIELAB space of every shade of the VITA guide using this method it was possible to reorder the guide according to their $\Delta E$ from the clearest to the darkest shade.

This study is part of the Investigation Project PRI-ODO-15/003 Facultad de Odontología Universidad de Chile.

Intercanthal distance and width of anterior teeth proportion in Chilean population.

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OBJECTIVE: Dentofacial proportions are a guide commonly used for selection and rehabilitation of the upper anterior teeth. The intercanthal distance (ICD) is the most stable in dimension over time. The aim of this study was to establish correlation between tICD and width of the maxillary anterior teeth in Chilean population.

METHODS: A cross-sectional study was designed. One-Hundred eleven volunteers students (average age 22.4 years; range: 18-28 years; 65.7% male) of the Universidad Austral de Chile were selected. ICD was measured between medial angles of the palpebral fissure. The mesiodistal width of maxillary central incisor, mesiodistal linear width of the four anterior incisors and the six upper anterior teeth through a model estudio were obtained. the difference measures by sex and a lineal correlation analysis between the intercanthal distance and width of the upper front teeth were analyzed (rho > 0.8; p <0.05 STATA 10.0).

RESULTS: All teeth measures were significantly higher in men than in women (p <0.05). A statistically significant between intercanthal linear distance and width of the four upper incisors (rho = 0.19) (p <0.05) was observed. A 1: 0.94 ratio of ICD : four anterior teeth and 1:1.28 ratio of ICD: six upper anterior teeth was obtained.

CONCLUSION: These results suggest that ICD could be used to estimate the linear width of the four upper front incisors and the six upper front teeth in edentulous Chilean patients.
Controversial use of occlusion concepts among students and teachers.

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Objective: The occlusion and its related concepts are defined in the Glossary of Prosthodontics Terms (GPT). However, lack of consensus is observed when are employed. The objective of this study was to analyse the use of these concepts in students, teachers and literature.

Material and method: A simple survey was applied to randomly selected students and teachers from the Dental Department, University of Antofagasta. Three questions were made: 1) Define "occlusion"; 2) Define "centric occlusion"; 3) What is for you "ideal occlusion"? The questions were given sequentially and the time allotted was three minutes each. A prepared team in GPT definitions classified the answers obtained from questions 1-2. In the third question, the concepts used by respondents to describe "ideal occlusion" were analysed (concept not defined by GPT). Complementarily, a revision about the use of "Centric Occlusion" in PubMed was conducted, using the following criteria: the concept in title or abstract of clinical studies published in dental journals since 2006 in English. The results were classified according to the GPT definition of 1987, 1994 and 2005.

Results: A total of 89 surveys were collected (60 students and 29 teachers). In the first question, responses of 63,35% of students and 79,3% of teachers coincided with the GPT definitions. In the second, responses of 51,6% of students and 34,4% of teachers coincided with the GPT. In the third, 11 groups of definitions were identified, where optimal occlusion, maximal intercuspal position, centric relation, correct tooth gear, among others, were the concepts more used. Additionally, 47 articles were selected for analysis, of which only eight authors explicitly used some definition indicated for GPT: five used the definition of 2005 and three of 1994.

Conclusion: A controversial use of the terminology associated with occlusion concepts by students, teachers and literature is observed.

Patients satisfaction of dental service in primary care centers of Quilpué

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OBJECTIVE: Determine patient’s satisfaction, through the SERVPERF survey, in the dental service delivered by Primary Health Care Centres of Quilpué.

METHOD: Descriptive, cross-sectional study. The population studied corresponded to users over 18 years old in the dentistry area of Primary Health Care Centres (PHCC) of Quilpué, selected at random. The minimum sample corresponded to 102 patients stratified by PHCC of Quilpué, attending the dental area between during the months of July and October of 2015. They were delivered, prior informed consent, a validated, self-administered, anonymous survey of 22 questions grouped into the following criteria: tangible elements, reliability, responsiveness, security and empathy, all measured on a scale of 1 to 7. The data obtained were analysed using Stata 11.2 and descriptive statics was used to describe the results.

RESULTS: A total of 308 surveys were applied to 255 women (82.8%) and 53 men (17,2%). The average rating of 6.5 was obtained for satisfaction, were the items of empathy, safety and capacity of response were the best evaluated (7, 6.5 and 6.7, respectively). The variable age was found to be statistically significant, where the greater the age, the greater the user satisfaction (p<0.05). Socio-demographic variables such as sex, years of study and occupation were not statistical significant (p>0.05).

CONCLUSIONS: Dental services of PHCC in the commune of Quilpué presented a high degree of rating when being evaluated, through the SERVPERF survey, by its users. Longitudinal evaluations are recommended for these services to acknowledge its shortcomings, and in this way, contribute to the development of strategies to compensate and strengthen the delivery of dental services.
Compressive resistance of post&core system with core build-up in different millimeters.

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**Objective:** Comparing compressive resistances of tooth remaining with different lengths of coronal height, restored with glass fiber post and core build-up.

**Methods:** 50 recently extracted one-root teeth were used, whom they received endodontic treatment. The sample was divided on a random way in five groups, which they were cut at different heights regarding of the LAC. The A group: from 2 mm, B group: 1.5 mm, C group: 1 mm, D group: 0.5 mm, E group: 0 mm. All these were restored with glass fiber posts cemented with ParaCore core build-up, and using the same material to rebuild the abutment. Each one of the samples was submitted to compressive strengths, with a forty five degrees inclination upon the cingulum using the universal tension machine Tinius Olsen H5k-5, with a 2 mm per minute head speed. The obtained information was analyzed by Shapiro-Wilk test, Variance analysis; ANOVA, and the Scheffe test.

**Results:** The tension average on MPa for the A, B, C, D and E groups were 74.92; 84.85; 89.4; 85.26 and 65.54 respectively. It did not find statistically significant differences between all the groups (F, P Value; F= 1.19; P=0.3301)

**Conclusions:** Under the conditions of this research, due to the homogeneous behavior of the groups, it can be concluded that the height of the “reminder” would not affect in the compressive resistance.

Effect of aging on stem cells from teeth of mice

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**OBJECTIVE:** Effect of aging on the percentage of stem cells in dental pulp and periodontal ligament of mice of different ages.

**METHOD:** This study includes three groups of two mice each one, divided according to their age in 2, 14 and 18 months. The palates were extracted, fixed with paraformaldehyde 4% and demineralized with EDTA 0.5M. 5µm histological sections were incubated with the primary antibodies STRO-1 and CD146, and later with secondary antibody IgM 488 and anti-goat 488, respectively. DNA staining with Hoechst was performed. Images were obtained with an epifluorescence microscope.

**RESULTS:** The percentage of stem cells relative to total cell population in dental pulp was 8.98% in 2 months’ group, 5.6% in 14 months’ group and 2.88% in 18 months’ group. While in periodontal ligament it was 11.26%, 6.75% and 4.56%, respectively. We found statistical difference between 2 months versus 14 months (p=0.0401) and 2 months versus 18 months (p=0.01).

**CONCLUSIONS:** These results suggest that the number of stem cells in dental pulp and periodontal ligament of mice’s teeth decreases as the age increases.
Psychosocial determinants of dental care attendance during pregnancy: a systematic review

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**OBJECTIVE:** This systematic review aimed to identify and analyze the psychosocial determinants of the attendance to dental care services during pregnancy.

**METHOD:** To identify studies were searched on the electronic databases PubMed, Scopus, Web of Science, LILACS, BBO, CINAHL and Medline using relevant keywords. Studies were also filtered by publication year (2000-2015) and language (English, Portuguese, Spanish and French). The quality of included studies was appraised using a modified Downs and Black tool. Study characteristics and results were tabulated and statistically significant factors were reported.

**RESULTS:** Seventeen papers were included in the review. The prevalence of use of dental services during pregnancy ranged from 16.7% to 83%. Demographic factors included women's age, marital status, parity, and ethnicity/nationality/language. Income, educational level, health insurance and residential area were the socioeconomic factors related with access to dental care during pregnancy. Many psychological and behavioral factors have been associated with the utilization of dental care: oral health education and hygiene practices, cariogenic food consumption, health values, smoking, beliefs in oral health and pregnancy, usual source of pre-pregnancy care, satisfaction with dental insurance, enrollment in governmental programs, medical referral and advice about dental visits. Referred symptoms of gingivitis, dental pain or perceived dental problems were the perceived need factors.

**CONCLUSIONS:** Demographic, socioeconomics, psychological/behavioral and perceived need were related with the determinants of the utilization of dental services during pregnancy. More well designed studies and with reliable outcomes are required to confirm the framework described in this review.

Clinical development of a new protocol in endodontic regeneration

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**OBJECTIVE:** Describe, implement and evaluate the results in 4 patients of a new protocol REP (Regenerative Endodontic Procedure) based on current concepts regarding the issue.

**METHOD:** This new protocol will be developed clinically in 4 patients in two sessions after diagnosis. Be candidates for treatment patients presenting immature permanent teeth with pulp necrosis, with or without apical lesion and incomplete root development measure 1 mm in diameter or more. In the first instance disinfection with 2.5% NaOCl and 17% EDTA is performed. moxifloxacin 400mg / 500mg metronidazole was used in paste consistency medication in root canal. In a second session, 15 days after stimulation bleeding, implantation of the matrix of fibrin rich platelet (FRP) and the cameral sealing was performed. The final restoration will be delayed until positive developments check box.

**RESULTS** According to the evolution of the 4 patients who underwent this investigation after the RE, were achieved the following signs and symptoms of success of the therapy proposal: - Reducing the size of radiographic apical lesion. - Formation of mineralized tissue in apical, partial and total. - It was found in one case a positive (+) response to pulp sensitivity test.

**CONCLUSIONS:** Regenerative procedures dentin pulp complex (REP) in immature permanent teeth will depend basically on the initial diagnosis. The term dental revascularization has been used to justify the possibility of a new formation of blood vessels periapical level and within the root canal system, favoring the response of vital pulp cells remaining in the apical portion restoring a functional pulp tissue and leading to the progression of root formation.
Mandibular Premolar Analysis by Cone Beam in a Chilean Population

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Objective: The purpose was to characterise the root anatomy of mandibular premolars (MPM) in a population of northern Chile.

Material and method: A sample of 488 MPM (268 first mandibular premolars and 220 seconds mandibular premolars) were selected and observed in the sagittal, axial and coronal plane using Cone Beam Computed Tomography. The number of roots, number of root canals and presence of C-shaped root canals were analysed.

Results: Considering both MPM, a higher prevalence of single root (98%) was observed. Considering each premolar, in the first MPM the prevalence was 98% with a single root and 2% with two roots. In the second MPM, 95.5% with a single root and one tooth was observed with three roots (two or more than three roots were not observed). In relation to the root canals, considering both MPM, a higher prevalence of single root canal (83%) was observed. In the first MPM the prevalence was 74.9% with a single root canal, 22.8% with two root canals and 2.3% with three root canals. In the second MPM the prevalence with single root canal was 92.7% and with two root canals was 4.1% (three or more root canals were not observed). Furthermore, the presence of C-shaped roots canals in the MPM, amounts to 13.1% of the first MPM and 3% of the second MPM.

Conclusion: The results are similar to what was observed in the literature about the number of roots and canals but show a greater prevalence of C-shaped roots canals.

Preparation and bioactivity of scaffold nanocomposites for bone tissue engineering.

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OBJETIVE: Assesses the in vitro bioactivity of scaffold nanocomposites prepared from bioceramics and biodegradable polyurethane.

METHOD: Hydroxyapatite and bioactive glass nanoparticles (nano HA, nano BG, mesoporous BG and nano mesoporous BG) were synthesized using the sol-gel technique. Polyurethane nanocomposites were prepared containing 2,5% and 5% of bioceramics. The synthesized materials were characterized with X-rays diffraction (XRD), infrared spectroscopy (FTIR-ATR), mechanical compression tests and scanning electron microscopy equipped with microanalysis elemental energy dispersive X-ray spectroscopy (SEM-EDX). Nanocomposites bioactivity was assessed by the ability to induce bone-type apatite in simulated physiological serum (FBS). Apatite formation was analyzed with XRD, FTIR-ATR and SEM-EDX. A cell proliferation assay was performed using the MTS colorimetric assay with human dental pulp stem cells (DPSCs)

RESULTS: Polyurethane nanocomposites showed an interconnected porosity with different shapes and sizes (40-300 μm), suitable to drive the formation of new tissue. Nanocomposites with nBG bioceramics presented the highest compression elastic modulus. SBF trials showed that nMBG and nBG nanocomposites had better bioactive properties than those of PU scaffold, MBG and nHA nanocomposites. Additionally, nBG (5%) and nMBG (5%) nanocomposites did not affect the viability of DPSCs.

CONCLUSIONS: The incorporation of bioceramics nanoparticles into polyurethane enables producing scaffold nanocomposites with improved properties for inducing the in vitro formation of bone-type apatite. The results of this study could have implications for the future design of more efficient biomaterials, particularly aimed at accelerating the process of bone regeneration in tissue engineering therapies.