

Dentistry Oral and Poster Presentation Abstracts
6th Annual CCTS Spring Conference
College of Dentistry Research Day
April 21, 2011

Oral Presentation

Abstract Title: **Macrophage Pattern Recognition Scavenger Receptors Protect Against Microbial-Induced Pregnancy Complications**

Author(s): H. S. Oz, Center for Oral Health Research, College of Dentistry, U of Kentucky
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Abstract:

Pregnancy is considered a state of immunomodulation with increased susceptibility to infections including oral disease(s) that could result in microbial translocation to the fetal membranes/fetus. Mares Reproductive Loss Syndrome is linked to the ingestion of caterpillars setae that puncture mucosal barriers, enabling vascular access to bacteria inhabiting these surfaces. In humans, ingestion of caterpillars has been reported in sporadic pediatric cases with mild to severe life threatening orofacial edema. The Streptococcus sp and Actinobacillus sp, present in the oral cavity of horses are also isolated from a number of aborted fetuses. We hypothesized that this aspect of innate immunity could be essential in bacterial translocation at maternal mucosal surfaces and alterations in this system would increase adverse fetal outcomes. Methods: Eighty program pregnant ICR and SR-A/CD36-deficient mice were injected via tail vein or intraperitoneally (i.p.) with commensal oral bacteria and/or those isolated from aborted fetuses (Streptococcus cricetus or Actinobacillus sp). Dams were monitored daily for physical distress, pain and pregnancy outcomes. Results: Normal dams injected with a single dose of either bacterial inoculum did not develop clinical symptoms. Day old pups injected i.p. with the bacteria developed internal focal abscesses, lost weight but recovered after one week. Normal dams receiving a second bacterial inoculum delivered dead fetuses. Similarly, SR-A/CD36-deficient dams demonstrated 100% fetal death after first infection. Significant up-regulation of the pro-inflammatory markers IL-6 and SAA were observed from 1-3 days after infection. Conclusions: These data indicate that macrophage scavenger receptors are required for fetal protection against microbial attack and support that maternal innate immunity is crucial for this protection.

Supported by: Grants from National Institutes of Health NIDCR-DE019177 (HO) and Thoroughbred Horseman Association (WD)

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Oral Presentation

Abstract Title: **Impact of Smoking on Implant Survival and Success in a University-based Implant Training Program**

Author(s): R. Estes, Department of Periodontology, U of Kentucky
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Abstract:

The University of Kentucky College of Dentistry established a formal implant training program in 1999. The program features stringent patient inclusion and exclusion criteria, incremental structured learning experiences, formal standardized protocols, and hands-on preclinical learning experiences. There is a formal quality assurance program to assess patient-centered outcomes in order to assess programmatic effectiveness and improve the patient outcomes. The aggregate outcomes data for the cohort of patients receiving implants in the 2000-2006 period reveals that the a priori benchmarks were exceeded, thus validating the effectiveness of the training program.

Supported by: University of Kentucky Department of Periodontology

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Oral Presentation

Abstract Title: Lack of Effect of n-3 PUFA on Periodontopathic Bacteria

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Abstract:

Objective: To test the hypothesis that administration of n-3 polyunsaturated fatty acids (PUFA) as a dietary supplement alters the distribution of selected oral pathogens in periodontitis patients.
Methods: A randomized double-blind placebo controlled study enrolled 126 subjects into four groups: oral hygiene instruction (OHI) +placebo, OHI + n-3 PUFA, scaling/root planing (SRP) +placebo, SRP + n-3 PUFA. Microbiologic samples from diseased and healthy sites were collected at baseline, 8, 16 and 28 weeks and were processed by qPCR. A universal primer was used to estimate total microbial counts and species-specific primers were used to quantify *P. gingivalis*, *T. denticola*, *T. forsythia*. **Results:** As expected, the diseased sites had about 1 log more bacteria and significant increases in the numbers of Pg, Td, and Tf compared to healthy sites across the population. By 8 weeks, the SRP patients had significantly lower levels of all three pathogens compared to the OHI group, irrespective of receiving PUFA or placebo. Also, the percent Pg and Td were similar to those in healthy sites at this time point. Although the total Pg, Td, and Tf remained elevated in disease sites throughout the 28 weeks, the percent of these pathogens was decreased in both SRP and OHI groups unrelated to administration of PUFA. Finally, the findings over the period of the trial indicated that changes in these pathogens as related to SRP treatment, was limited to the disease sites in the patients. **Conclusions:** The results demonstrate that SRP and improved oral hygiene practices in these periodontitis patients significantly affected the level of these species in pathogenic biofilms. SRP was most effective, albeit the differences were diminished by 16 weeks. Furthermore, this regimen of n-3 PUFA had a negligible impact on the total bacteria or species distribution in diseased or healthy sites.

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Oral Presentation

Abstract Title: Age-related changes in the Gingival Expression of Apoptotic Genes

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Abstract:

Paradoxically, despite the functionally reduced immune response associated with aging, chronic inflammatory disorders are highly prevalent in this population. Recent evidence suggests that impaired apoptosis could be related to chronic inflammation with aging. Additionally, some reports have suggested that apoptosis is associated with chronic inflammatory periodontal disease. Nevertheless, the cellular and molecular changes related to apoptosis in the periodontium, particularly associated with a higher prevalence of chronic periodontitis in aged populations have received little attention. Objective: To determine alterations in the expression of apoptotic genes in samples of healthy and periodontitis gingival tissues across the lifespan Methods: Analysis of the expression of 88 genes in apoptotic pathways was performed in healthy and periodontitis gingival biopsies from young (<3 yo), adult (12-15 yo) and aged (18-22 yo) nonhuman primates (*Macaca mulatta*), using the GeneChip[®] Rhesus Macaque Genome Array. Gene expression profiles were mapped to the KEGG Database for ontology for a comparative analysis between different age groups and health vs. disease. Results: Lower expression of anti-apoptotic and higher expression of pro-apoptotic genes were mainly associated with healthy gingival tissue from young animals when compared with aged animals. Few differences in apoptosis gene expression were observed in healthy gingival biopsies between adult and aged animals. Remarkably, comparison of healthy and periodontitis gingival tissues showed that the up- or down-regulated apoptotic gene profiles in the diseased tissues are significantly different in adults compared to aged animals. Conclusion: These results suggest that apoptosis events occur normally in healthy gingival tissue but these processes are reduced in aging. The unique molecular aspects of the apoptotic pathways in the pathophysiology of periodontal disease suggest that the disease may have different mechanisms in adult versus aged tissues.

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Dentistry Oral and Poster Presentation Abstracts
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Oral Presentation

Abstract Title: Linkage Analysis of Class III Phenotype and Human Chromosome 1

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J.K. Hartsfield, Jr., Division of Orthodontics, University of Kentucky College of Dentistry, Lexington, KY and Center for Oral Health Research, Hereditary Genomics Laboratory, University of Kentucky College of Dentistry, Lexington, KY

Abstract:

Objective: The genetics factors what influence development of the Class III phenotype are not well understood, with polygenic, and autosomal dominant with variable expressivity and incomplete penetrance inheritance proposed. Frazier-Bowers et al. identified 5 potential susceptibility loci for the Class III phenotype in a South American Caucasian population (1p22.1-2, 3q26.2, 11q22, 12q12.13, 12q23). In addition, Yamaguchi et al. identified 3 additional loci (1p36, 6q25, 19p13.2) within an Asian population. The purpose of this study is to identify specific genetic markers, within the proposed susceptibility regions on Chromosome 1, with linkage to the Class III phenotype. The null hypothesis is that there is no genetic linkage between the Class III phenotype and the tested single nucleotide polymorphisms (SNPs) on Chromosome 1. **Methods:** Thirty-three Caucasian families (1,305 individuals) from Brazil and Colombia participated in this study. DNA was isolated from buccal swabs of 267 of these individuals, 151 of whom were affected by the Class III phenotype. Six highly polymorphic SNPs on chromosome 1 were analyzed using a Taqman[®]-based genotyping on a Roche LightCycler480[®] (rs240504, rs282000, rs4658090, rs665098, rs814546, and rs12045777). **Results and Conclusions:** Linkage analysis will be completed in collaboration with the University of Pittsburgh to determine the log of the odds score (LOD). Linkage of Class III with each SNP will be defined as follows: Definite linkage when the LOD>3.0 (i.e., p<0.001); tentative linkage when the LOD=2-3; weak linkage when the LOD=1-2; and no linkage if LOD<1.

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Oral Presentation

Abstract Title: **Relative Telomere Length and Telomerase Gene Number in Familial Nonmedullary Thyroid Cancer**

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Abstract:

The incidence of human thyroid cancer (TC) is on the rise faster than any other form of cancer in both sexes. TC is subdivided into two forms, medullary and nonmedullary (NMTC), with NMTC accounting for approximately 90% of all cases and with 5% familial in origin (FNMTC). Familial aggregation supports a role for environment and/or genetic factors in FNMTC. It is typically more aggressive than the other forms of TC in terms of: younger age of onset; higher incidence of tumor multifocality; extensive local invasion; lymph node metastasis; and local/regional recurrences. To better understand genetic factors in FNMTC, we: 1) are examining the mean relative telomere length (RTL) between individuals with FNMTC and patients with sporadic TC; and (2) looking for correlations between the RTL and the number of copies of the telomerase gene. Blood samples of 80 individuals were collected and processed with Ficoll-Paque PLUS. DNA was obtained from the white blood cells with QIAamp DNA Mini Kit (QIAGEN). We assessed the RTL and telomerase gene copy number in 80 individuals within a cohort of FNMTC and sporadic cases. For the RTL measurement, quantitative real-time PCR (LightCycler[®]480, Roche) was performed using specific primers for telomeres and a single copy gene (scg; albumin) in a multiplex PCR. Each pair has a different annealing temperature and strongly correlates with other RTL assays. The telomerase gene copy number assay was performed with specific primers for the telomerase gene as well as a scg (CSF1R). Both were analyzed as a ratio of Target/Single Copy gene. Our preliminary data suggest that FNMTC has a shorter mean relative telomere length when compared to sporadic cases, corroborating previous findings in an Italian cohort. However in contrast to the Italian report, there is no difference in telomerase gene copy number. The mean shorter telomere length may be a possible explanation for the younger age of onset of thyroid cancer in families than in sporadic cases, based on studies showing that one step of cancer cell immortalization includes shortening telomeres. Although our study is still preliminary, we were able to confirm some of the results in another population. Currently, we are recruiting more individuals, including a healthy group, and performing assays of telomerase gene expression and enzymatic activity.

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Oral Presentation

Abstract Title: **Obesity and health related quality of life (HRQL): a cross sectional analysis of the Kentucky population**

Author(s): J. F. Yepes, Department of Epidemiology, U of Kentucky College of Public Health
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Abstract:

OBJECTIVE: The main purpose of this study is to assess the relation between obesity and health-related-quality of life (HRQL) in a sample from the Commonwealth of Kentucky. **METHODS:** Kentucky data from the Center for Disease Control and Prevention 2005 Behavioral Risk Factors Surveillance System (BRFSS) was assessed to determine the relationship between obesity and health-related-quality of life domains (physical, mental, and activity limitations). Logistic regression was used to establish the relation controlling for social and demographic factors, health status, and diet/exercise behavior. **RESULTS:** The study found according to the World Health Organization classification of obesity, that in Kentucky (N=6581) approximately 18.6% of the respondents were obese and 11.8% were severely obese. Exercise and dietary modifications were used by 48% of obese and 42% of severely obese individuals. Logistic regression analysis showed that the likelihood of experiencing greater than 14 days of poor physical health was 87% higher in severely obese compared to those who were not overweight (OR= 1.87, 95% CI 1.18-2.93). The likelihood of experiencing greater than 14 days of poor mental health was 80% higher in severely obese compared to those who were not overweight (OR= 1.80, 95% CI 1.19-2.75). **CONCLUSION:** This study found an important association between obesity and the likelihood of experiencing low physical health, mental health and activity limitations HRQL scores.

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Dentistry Oral and Poster Presentation Abstracts
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115	Abstract Title:	Bone Remodeling Salivary Biomarkers in Healthy vs. periodontitis Patients
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Abstract:		
<p>Abstract Background: whole saliva is a rich pool of biomolecules and proteins that makes it a useful diagnostic tool for periodontal diseases. However, bone remodeling salivary biomarkers have been detected in saliva. This study was made to determine if select bone remodeling salivary biomarkers (osteoprotegerin) OPG,(Macrophage inflammatory protein 1-alpha) MIP 1-1±, (C-terminal type 1 collagen telopeptide) 1±-CTX, and (pyridinoline cross-linked carboxyterminal telopeptide of type 1 collagen) ICTP could be used to distinguish between healthy and periodontitis patients and thus could be used to aid in the diagnosis of periodontitis. Methods: This cross-sectional study consisted of two groups (test and control groups). Each group consisted of 40 subjects (>18 years). 40 subjects from the test group had moderate to severe generalized chronic periodontitis, whereas the 40 subjects from the control group were healthy. Periodontal examination, which included pocket depth measurements (PD), attachment level (AL), and bleeding on probing (BOP), was done for each subject. Unstimulated whole saliva samples were obtained from each subject. The samples were frozen at -80°C for analysis. Saliva OPG, ICTP, MIP1-1±, and 1±-CTX concentrations were determined by ELISA. Statistical analysis was performed by using two sample t-statistics.</p>		
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116	Abstract Title:	Effect of Essential Oils on Oral Pathogens
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Abstract:		
<p>Essential oils are plant derived substances that have been shown to have antimicrobial activity. However, limited evidence of activity against oral bacteria is available. Objective: The present study was designed to ascertain if a composite formulation of three essential oils had antimicrobial activity against a panel of Gram positive and Gram negative oral bacteria. ORA MD is a commercially available composite of peppermint, spearmint, and almond oils and has been reported to be effective in the treatment of periodontal infection and inflammation. However, no objective studies are available to support these clinical observations. Methods: The antibacterial activity of the essential oils was assessed in triplicate against a panel of early, intermediate, and late plaque colonizers including <i>S. sanguis</i>, <i>S. oralis</i>, <i>S. gordonii</i>, <i>A. naeslundii</i>, <i>F. nucleatum</i>, <i>A. actinomycetemcomitans</i>, and <i>P. gingivalis</i> strains 381 and W83 with <i>S. aureus</i> as a non-oral control. A spectrophotometric assessment of inhibition of planktonic growth and a growth inhibition zone assay on agar plates using filter paper discs were used for each species and strain. Results: The composite of essential oils effectively inhibited the growth of all species and strains tested using either the spectrophotometric assay at 2µl essential oils/ml media or the plate assay at 1µl/mm of filter paper disc. The essential oils were more effective against the Gram negative species and strains than against the Gram positive species and least effective against <i>S. aureus</i>. Conclusions: The composite mixture of peppermint, spearmint, and almond oils has effective antibacterial activity against Gram positive and Gram negative oral bacteria although appears to be most effective against Gram negative species. This suggests that the beneficial clinical effects in reducing periodontal inflammation may be due to the antibacterial effects of the oils. Further studies are needed to elucidate the relative antibacterial activities of each oil independently.</p>		
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117	Abstract Title:	Correlating Parenting Styles with Oral Hygiene and Dental Caries: A Pilot Study	
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	Abstract:	<p>Purpose: To determine if parenting styles could be a non-biological risk factor for caries by correlating with children's plaque scores and a caries index. Methods: Nine parents, with children between 4-9 years of age completed the 32- item Parenting Styles and Dimensions Questionnaire, which assessed the individual and their partner's parenting style. Parents and children participating had been provided oral hygiene instructions at a previous initial visit. OHIS and df index were recorded for each child. Results: Nine parents completed the questionnaire, 4 were female and 2 were not the biological parent. Six had college degrees. Simple linear regression and correlation coefficients were used to investigate a relationship between dependent measures and parenting style. The mean age of the children was 6.8 1.3 years. The average score on the authoritative domain of the was 4.2 0.42 indicating the parents' style was authoritative. More variability in the scores was observed for the rating of partners. Only the scores assigned to partners demonstrated a relationship with the indices recorded. Specifically, the partner's permissive score was positively related to number of decayed teeth , controlling for the child's age. Conclusions: Parents' self-evaluation was authoritative; with some evaluating partners as permissive. The df index increased when the partner 's style was permissive, suggesting that parenting styles might be a non-biological risk factor for caries.</p>	
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118	Abstract Title:	Antibacterial effects of Tea Tree Oil against oral bacteria	
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	Abstract:	<p>Essential oils have been shown to have antibacterial activities but there are limited data on their efficacy against oral bacteria. OBJECTIVE: The objective of the present study was to investigate the antibacterial activity of the essential oil of <i>Maleleuca alternifolia</i> (Tea-Tree Oil) against a selection of Gram positive and Gram negative oral bacteria. METHODS: The oral bacteria tested in this study were the cariogenic Gram positive aerobic bacteria <i>Streptococcus gordonii</i> and <i>Streptococcus mutans</i> and the periodontopathic Gram negative anaerobic bacterium <i>Fusobacterium nucleatum</i>. <i>Staphylococcus aureus</i> was included as a positive control since previous studies have demonstrated that Tea-Tree oil has antibacterial activity against this organism. Bacterial suspensions were prepared at 0.3 OD620 in 10mM phosphate buffer. A 1/10th volume of each bacterial suspension was challenged with 0.125%, 0.25%, 0.5% and 1% Tea Tree Oil (TTO) in 1X PBS supplemented with 1% Tween 80 solution for an hour at 37°C in 5% CO₂ chamber. Tween 80 was used as an emulsifier. Each condition was performed in triplicate. Controls were run for each condition without TTO. Ten-fold serial dilutions of each suspension were then plated on blood agar plates and grown either aerobically or anaerobically at 37°C overnight. The data was calculated as the percentage of viable bacterial colonies compared to controls. RESULTS: TTO was highly bacteriocidal against the Gram negative F. nucleatum with over 99% of bacteria killed at 0.125% TTO versus 84% for <i>S. mutans</i>, 65% for <i>S. gordonii</i>, and 20% for <i>S. aureus</i>. 100% killing was achieved at 0.25% TTO for <i>F. nucleatum</i> and <i>S. gordonii</i> with 90% killing for <i>S. mutans</i> and <i>S. aureus</i>. CONCLUSION: Tea Tree Oil is antibacterial against Gram positive and Gram negative oral bacteria and may be effective in controlling oral infections that are associated with dental caries and periodontal disease.</p>	
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Dentistry Oral and Poster Presentation Abstracts
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119	Abstract Title:	Characteristics of Child Patients with Failed Scheduled Dental Appointments
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Author(s):	J. Hicks, Division of Pediatric Dentistry, College of Dentistry, U of Kentucky K. R. Mathu-Muju, Division of Pediatric Dentistry, College of Dentistry, U of Kentucky D. A. Nash, Division of Pediatric Dentistry, College of Dentistry, U of Kentucky H. F. Li, College of Public Health, U of Kentucky H. M. Bush, College of Public Health, U of Kentucky A. Kaplan, Information Technology, College of Dentistry, U of Kentucky	
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Abstract:		
<p>Purpose: The purpose of this study was to identify characteristics associated with child patients who routinely failed dental appointments. A secondary aim was to determine hours of clinic time lost from failed appointments. Methods: A 52 month retrospective study was conducted using the electronic health records of all patients <18 years old at the time of their first appointment at the College of Dentistry, University of Kentucky. Characteristics of 10, 058 patients were examined including provider type (resident, faculty, hygienist), appointment type, length of appointment, distance travelled, season, payment method, and time of day. Results: The average number of appointments per person is 7.0 ± 9.4 appointments. Twenty-five percent of patients had never failed an appointment, 14% infrequently failed (<25% of appointments), 42% sometimes failed (25-75% of appointments), and 21% frequently failed (>75% of appointments) to keep appointments. Patients most likely to fail appointments were treated by residents, had summer appointments, had appointments < 1 hour, were self-pay, and had appointments scheduled before noon. The total number of lost clinic hours was 18,271.75 hours. Conclusions: Failed appointments result in lost clinical productivity and revenue. Recommendations for managing patients who frequently fail appointments could include booking afternoon appointments and using concurrent scheduling.</p>		
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120	Abstract Title:	In vivo evaluation of a novel polymer for the prevention of adhesion formation in peripheral nerve microsurgery
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Author(s):	R.B. Johnson, College of Dentistry, U of Kentucky L.L. Cunningham, Division of Oral and Maxillofacial Surgery, U of Kentucky	
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Abstract:		
<p>In conjunction with the Department of Chemical and Materials Engineering at the University of Kentucky, this project will examine the efficacy of a novel, coupled diblock copolymer system of PEG PMA and the fibrin affinity peptide CREKA, in the disruption of postoperative scar tissue adhesions forming at the peripheral nerve transection injury repair site in the rat animal model. The efficacy of the polymer will be measured against two controls: 1. The conventional method of nerve repair in which proximal and distal ends are reattached and 2. The modified conventional method of repair using a transversely sectioned polyglycolic acid material called Neurotube for coverage at the repair site. Animals will be divided into one of three groups according to method of nerve repair: conventional, modified conventional or polymer. Each group will consist of 15 male subjects and all animals will receive a complete transection injury to the sciatic nerve of the right hind limb that will undergo primary surgical repair with the method depending upon which group is being used. In all groups, primary repair of the transection injury will be allowed to proceed for 30 days. At the end of this time period, all animals within a group will undergo functional evaluation through walking track analysis, a quantitative method used to assess functional recovery from sciatic nerve injury through footprint analysis using specific measurements of both the healthy left limb and the repaired right limb. Subsequently, animals in a group will be sacrificed and nerve tissue will be harvested for gross analysis of adhesive scar tissue. Scar tissue adhesions will be measured and expressed as a percent of the total harvested nerve tissue surface area; this measure will be the first component of the total gross adhesion score. The second variable will be strength of adhesion and the third gross adhesion characteristics. The three scores will be summed for total gross adhesion score. The polymer system will be coupled to a fluorescence protein so that the extent to which it covers the repaired tissue can be visualized during fluorescence microscopy. Histopathologic analysis will also be performed with a pathologist to evaluate the extent of inflammatory response, acute necrosis and presence of any residual agent.</p>		
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Supported by: Pilot funding from UK CCTS and the Division of Oral and Maxillofacial Surgery		
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121	Abstract Title:	Parental Compliance With Instructions To Remain Silent In Dental Operatory	
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	Abstract:	<p>Purpose: To determine if there is any difference in parental compliance when written and verbal instructions versus written instructions only are given to parents to remain silent in the dental operatory while their child receives restorative treatment. Methods: Thirty-nine parents of children between 4-9 years old presenting for restorative care met eligibility criteria for the study. Parents were randomly assigned to a written instructions only group or a group that received both written and verbal instructions. Results: Thirty-two of 39 parents (82%) followed instructions to remain silent. There was not a significant difference in parental compliance with written (78%) versus written and verbal instructions (86%). Overall, fathers and/or legal guardians were silent 90%, and mothers 79% of the time. Conclusions: Parents can be expected to comply with instructions to remain silent in the operatory when given either written, or written and verbal instructions to do so. However, it is possible that reinforcing written instructions with verbal ones by the dentist enhances the dentist/parent relationship. Fathers/legal guardians tended to be more compliant than mothers.</p>	
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122	Abstract Title:	Effects of Periodontal Inflammation on Biologic Width	
	Author(s):	Matthew S. Killingsworth, College of Dentistry, U of Kentucky Jared M. Shelton, College of Dentistry, U of Kentucky Richard J. Kryscio, College of Arts and Sciences, U of Kentucky Michael J Novak, Center for Oral Health Research, U of Kentucky	
	Abstract:	<p>Previous studies that have examined the biologic width (BW) in periodontal health and disease have not considered the potential confounding role of periodontal inflammation and the associated changes in probing pocket depth (PD) and clinical attachment levels (CAL) on the dimensions of BW. Objective: This study was designed to evaluate the effects of periodontal inflammation on BW and its relationship to PD and CAL. Methods: 62 subjects were evaluated by two calibrated examiners for PD and CAL at proximal tooth surfaces and inflammation was assessed at the same sites by the presence or absence of bleeding on probing (BOP). BW was calculated as the distance from the cemento-enamel junction (CEJ) to the alveolar bone crest (AC) minus CAL at the selected proximal sites. AC was measured on bitewing and periapical xrays as the distance from the CEJ to AC. BW reflects the clinical dimensions of the supracrestal soft tissue attachment to tooth/root surfaces and includes the junctional epithelium and the supracrestal connective tissue attachment. Results: After correcting for age, gender, and smoking, differences of least square means revealed that the clinically measurable BW was not significantly different between healthy and gingivitis sites and neither sites were significantly different from mild periodontitis sites with PD of <u></u>5mm but with CAL of <u></u>1mm in the presence or absence of BOP. However, BW was significantly different (p>0.0001) between gingivitis and moderate periodontitis sites and healthy and moderate periodontitis sites (p<0.0001)with CAL of <u></u>2mm in the presence or absence of BOP. In addition, BW changed significantly with increasing CAL in the presence or absence of BOP. Conclusions: The assessment of BW from clinical and radiographic measures does not differ significantly between healthy and gingivitis sites. However, BW changes significantly with increasing CAL in the presence or absence of BOP.</p>	
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Dentistry Oral and Poster Presentation Abstracts
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123	Abstract Title:	Evaluation of Retention Protocols Among US Members of the American Association of Orthodontists
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Author(s):		
<p>J. K. Hartsfield, Jr., Division of Orthodontics and Hereditary Genomics Laboratory, College of Dentistry, University of Kentucky D. Nash, Division of Pediatric Dentistry, College of Dentistry, University of Kentucky D. Fardo, Department of Biostatistics, College of Public Health, University of Kentucky</p>		
Abstract:		
<p>Objectives: Little research has been conducted evaluating protocols and trends in orthodontic retention. The purpose of this study was to identify the general retention protocols employed by United States orthodontists. Additionally, our goal was to identify trends in these orthodontic retention protocols by evaluating how they have changed over the past five years and how they may continue to change over the next five years. Methods: The study was conducted via a 36 question electronic survey (REDCap; Nashville, TN) with branching logic on certain questions. The survey was sent to all 9,143 practicing US members of the AAO. 1,632 responses were received (18%). Results: Respondents who extract less report an increased use of fixed retention in the maxillary (p=0.041) and mandibular (p=0.0030) arches. Respondents who extract less and use removable retainers were more likely to tell their patients to wear their retainers at night for the rest of their lives (p=1.63x10⁻⁶). Conclusions: Mean retention protocols of the surveyed population show a predominant use of Hawley or vacuum-form retainers (VFRs) retention in the maxillary arch and fixed retention in the mandibular arch. For both arches, there is a current shift away from Hawley retainers and toward VFR and fixed retention.</p>		
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124	Abstract Title:	Alcohol septal ablation for treatment of hypertrophic obstructive cardiomyopathy as a model for the serum and salivary biomarker release patterns following acute myocardial infarction
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Author(s):		
<p>J.D. Sneed, Department of Internal Medicine, Division of Cardiovascular Medicine, College of Medicine U of Kentucky C.L. Campbell, Department of Internal Medicine, Division of Cardiovascular Medicine, College of Medicine U of Kentucky R.J. Kryscio, Department of Chemistry, Rice University, Houston, TX J.T. McDevitt, Department of Chemistry, Rice University, Houston, TX C.S. Miller, Department of Oral Health Practice, Center for Oral Health Research, College of Dentistry U of Kentucky</p>		
Abstract:		
<p>Background: Alcohol septal ablation (ASA) is the current treatment for hypertrophic obstructive cardiomyopathy (HOCM). Because ASA causes myocardial injury, its biomarker release pattern models that of acute myocardial infarction (AMI). However, to date only the classic serum cardiac biomarkers, troponin I (TnI), creatine kinase MB fraction (CK-MB) and creatine kinase (CK) have been studied using this model. In as much as new biomarkers and bodily fluids besides serum may have clinical utility in the assessment of AMI, we sought to determine the kinetic release patterns of classic and inflammatory biomarkers in serum and saliva post-ASA. Hypothesis: Salivary cardiac biomarkers demonstrate a predictable kinetic pattern of biomarker release consistent with serum biomarkers following an AMI caused by ASA for HOCM. Methods: Serum and unstimulated whole saliva (UWS) analytes were measured from ASA patients (n=15) at baseline and 8, 16, 24 and 48 hours later. Samples were analyzed for 13 proteins relevant to cardiovascular disease using Beadlyte technology (Luminex®) and Beckman Access analyser. Data were analyzed for kinetic patterns using regression and analysis of variance. Results: Serum TnI, CK-MB and myoglobin (MYO) levels rose rapidly and peaked > 800-fold, 175-fold and 10-fold above baseline levels between 4 and 16 h post-ablation (p<0.001). These 3 biomarkers predicted cardiac damage by 8 h. All 13 biomarkers were detectable in UWS, with levels of TnI, CK-MB and C-reactive protein (CRP) rising significantly during the postoperative course. Conclusion: Serum cardiac biomarkers produce a characteristic pattern of AMI following ASA. Select salivary analytes also reflect changes associated with myocardial damage. These data suggest that a saliva-based test may be useful for providing diagnostic information relevant to cardiac damage that occurs during AMI.</p>		
Supported by:		
U01 DE017793 from the NIDCR (CM) and the Center for Oral Health Research Student Research Fellowship (JK)		
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Dentistry Oral and Poster Presentation Abstracts
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125	Abstract Title: Pediatric Oral Health Knowledge of Nurses in a Multi-County Kentucky Health Department
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Abstract:	Purpose: The purposes of this study were to identify: pediatric oral health knowledge and dental referral practices of public health nurses, types of oral health care currently provided, and perceived barriers to oral health care provision within a multi-county Kentucky health department. Methods: A 27-question online survey was conducted of public health nurses within the Northern Kentucky Health Department. Questions covered demographics, oral health knowledge, dental referral practices, oral health care provision, and barriers to provision of oral health services. Results: Oral health knowledge: 58% of respondents agreed children should have their first dental visit by Age 1; 100% agreed a mother's oral health status is a good predictor of her child's oral health; 87% agreed mothers can transfer cariogenic bacteria to their children; 92% agreed fluoride can help prevent tooth decay. Referral practices: 76% of respondents refer all pediatric patients to the dentist; 24% refer only when oral examination reveals a concern; 83% refer patients to private practice dentists. Oral health care: 96% of respondents applied fluoride varnish to children's teeth; 87% educated patients on fluoride benefits; 54% provided demonstration of oral hygiene techniques. Barriers: Respondents reported parental cooperation and existing oral health beliefs, inadequate time during patient visits, and child cooperation as barriers to providing oral health services. Conclusions: Kentucky public health nurses are generally knowledgeable about infant and toddler oral health care. Existing parental notions on oral health and busy health department schedules interfere with the provision of oral health education and preventive services within Kentucky's health departments.
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126	Abstract Title: Salivary Calcium and MUC5b Association with Xerostomia Following Radiation Therapy
Author(s):	M. K. Randall, College of Dentistry, U of Kentucky J. Feddock, Department of Radiation Medicine, U of Kentucky M. Kudrimoti, Department of Radiation Medicine, U of Kentucky J. Stevens, Center for Oral Health Research, College of Dentistry, U of Kentucky M. E. Randall, Department of Radiation Medicine, U of Kentucky J. F. Yepes, Pediatric Dentistry, U of Kentucky C. S. Miller, College of Dentistry, U of Kentucky
Abstract:	Purpose: To determine if calcium and/or Mucin 5b (MUC5b) levels are associated with perception of xerostomia in patients undergoing radiation therapy (XRT) for head/neck cancer. Background: Salivary flow rate decreases following XRT treatment for head/neck cancers, significantly affecting quality of life. MUC5b is the major subcomponent of mucin, a sticky component of saliva. Calcium ions are believed to be involved in neuronal pathways that control perception of dry mouth (xerostomia). Methods: Subjects diagnosed with head/neck cancer and scheduled to undergo XRT were recruited from the Department of Radiation Medicine. Each subject provided stimulated whole saliva and completed a 14-item xerostomia inventory at 3 visits (baseline before treatment, 2 weeks into treatment, and immediately following treatment). Saliva samples were centrifuged, aliquoted, and stored at -80°C until laboratory analysis was performed. Calcium and MUC5b were analyzed by ELISA assay. Results: Thirty patients have been enrolled and 22 have completed all study visits (24 IMRT, 3 TOMO, 1 Conventional, 2 unknown). Patient characteristics include: mean age 60 years (range: 40-79); 28 Caucasian, 1 African-American, 1 Indian; 27 male, 3 female. In this study group the mean concentration of calcium increases from 3.96mg/dL (0.99-8.91) at the initial visit, to 5.41mg/dL (1.09-14.49) for visit 2, and 5.31mg/dL (3.37-17.68) for visit 3. The median values for MUC5b are 7571.8 units/mL (386.8->200,000), 7068.4 (204.4->200,000), and 8533.2 (321.0->200,000) respectively. Conclusions: Salivary flow rate >MUC5b > Calcium in correlation with the perception of dry mouth. Achievement of our target enrollment should provide further insight into these relationships.
Supported by:	UK College of Dentistry, UK Center for Clinical and Translational Science, American Association of Dental Research
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127	Abstract Title:	Implants vs. Canine Substitution in Orthodontic Patients
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Author(s): J.J. Roedig, Department of Orthodontics, U of Kentucky
 J.K. Hartsfield, Department of Orthodontics, U of Kentucky

Abstract:

In the treatment of orthodontic patients a decision has to be made when patients lack one or both maxillary lateral incisors. The two most popular choices in caring for these patients are: closing the space and substituting the canine tooth for the lateral incisor, or reopening space and placing an implant supported crown. Both of these options can have positive and negative outcomes. While canine substitution can lead to lack of a good functional occlusion, extensive restorative work, and lack of retaining a good result, implant placement can lead to infraocclusion, interproximal bone loss, abutment exposure, and blue colored labial gingival. Despite the lack of long term evidence on implants, recent studies have shown that even in patients whose adolescent growth is complete, dentoalveolar growth changes still occur into late adulthood. These dentoalveolar changes result from continuous eruption of the teeth, as well as growth and rotational changes of the jaws. Additionally, the maxillary anterior area is extremely esthetically sensitive. As dental professionals, it is our responsibility to determine for each individual case, how the best result can be achieved both functionally and esthetically for our patients.

Supported by: University of Kentucky Orthodontics

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128	Abstract Title:	Childhood Obesity's Influence on Skeletal Maturation
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Author(s): C. Beeman, College of Dentistry, U of Kentucky
 M. McHugh, College of Dentistry, U of Kentucky

Abstract:

OBJECTIVE: Our objective was to examine the affect childhood obesity measured through BMI affects skeletal maturation exhibited in orthodontic patients. Our hypothesis is that patients with higher BMI will show accelerated skeletal maturation. **BACKGROUND:** Body Mass Index (BMI) is used as a screening tool to measure obesity. Though it does not directly measure body fat, research has shown that BMI correlates to direct measures of body fat such as underwater weighing and dual x-ray absorbtometry¹. In the literature obesity has been shown to influence pubertal growth, bone metabolism, and craniofacial growth among other things.² Two current methods to determine skeletal age are the Fishman hand-wrist analysis or using the cervical vertebrae to give a skeletal maturity index (SMI). Though the Fishman hand-wrist analysis has been around longer, both methods have been proven accurate and reliable in orthodontics^{3,4,5} and some prefer SMI since extra radiographs and radiation are avoided. **METHODS:** We collected age, gender, race, height, and weight from charts in UK's Orthodontic Graduate Clinic for all the patients between 6-19 years old. The patients' BMI was calculated and then separated into normal (N,5%-85%), overweight (OV,85%-95%), and obese (OB,>95%) according to the age and gender specific growth charts from the CDC. After stratifying the data by gender (M/F), BMI category (N,OV,OB) and age (6-10,11-13,14-18) we then used a program (R Sample) to randomly select 178 charts (10 for each gender/BMI/age group) from 578 charts that met in the inclusion criteria. As trained, Adam Reynolds scored the SMI on a scale of 1 to 6 according to the morphology of the cervical vertebrae 2-4 on patients' cephalometric radiographs as first described by Dr. Lamparski⁵. **CONCLUSION:** Using a one way anova test to compare the mean SMI score for each stratified group across BMI categories showed that there was no statistical correlation between BMI and bone maturation measured by SMI. There is a trend towards statistical significance as age increases which suggests that this subject may merit further research using other skeletal maturity indicators.

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Dentistry Oral and Poster Presentation Abstracts
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129	Abstract Title: Effect of Tat on Oral Bacteria-induced HIV-1 promoter activation	
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	Abstract: Trans-activator of Transcription (Tat) is an HIV-1 protein essential for viral replication. Oral bacteria induce HIV-1 reactivation; however the potential role of Tat in this response has not been addressed. Objective: To determine the effect of Tat on HIV-1 promoter activation induced by oral Gram-negative (G-; <i>F. nucleatum</i> , <i>P. gingivalis</i>) and Gram-positive (G+; <i>S. gordonii</i> , <i>S. sanguinis</i>) bacteria. Methods: BF24 monocytes/macrophages (Tat-) stably transfected with the HIV-1LTR/CAT promoter were treated with recombinant Tat (rTat) before bacterial challenge, and CAT activity and cytokine/chemokine production were determined. The inhibitor BAY 11-7082 and a TransAM assay were used to evaluate the role of NFkB(RelA) in HIV-1LTR activation. THP89GFP cells (Tat+) were also used for viral reactivation (i.e. EGFP and p24 levels). Results: HIV-1LTR activation induced by G- bacteria was not increased by rTat in BF24 cells; however <i>S. gordonii</i> , but not <i>S. sanguinis</i> enhanced HIV-1LTR activation in the presence of rTat. The Tat-dependent HIV-1LTR activation induced by <i>S. gordonii</i> correlated with IL-8, but not TNF α or IL-6 production, and this response was abrogated by BAY11-7082. Kinetics of NFkB(RelA) activation correlated with the ability of <i>F. nucleatum</i> or rTat, but not <i>S.gordonii</i> +rTat to activate HIV-1LTR. Finally, <i>S. gordonii</i> induced HIV-1 reactivation in THP89GFP but not in BF24 cells. Conclusions: <i>S. gordonii</i> induces HIV-1LTR activation in the presence of rTat in monocytes/macrophages via a mechanism that involves NFkB activation. Although the level and time of NFkB(RelA) activation induced by oral Gram-negative bacteria could be associated with a Tat-independent HIV-1LTR activation, these variables do not explain the Tat-dependent HIV-1LTR activity induced by <i>S. gordonii</i> .	
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130	Abstract Title: Clinical Assessment of the Biologic Width	
	Author(s): Jared M. Shelton, College of Dentistry, U of Kentucky Matthew S. Killingsworth, College of Dentistry, U of Kentucky Richard J. Kryscio, College of Arts and Sciences, U of Kentucky Michael J Novak, Center for Oral Health Research, U of Kentucky	
	Abstract: The supracrestal soft tissue attachment of the periodontal tissues to the tooth/root surface has been termed the "biologic width"(BW) and has been determined from histologic specimens of autopsy material to be an average of 2.04mm in width. This average number is frequently used clinically but no clinical evaluations of the BW have been reported in periodontal sites with and without periodontitis. Objective: This study was designed to clinically evaluate the BW using clinical probing measures and xrays in patients with healthy, gingivitis, and periodontitis-affected sites. Methods: 62 subjects were evaluated for probing pocket depth (PD), clinical attachment levels (CAL), and bleeding on probing at proximal surfaces of all teeth. Bitewing and periapical xrays were used to measure the distance from the cemento enamel junction (CEJ) to the crest of the alveolar bone at proximal surfaces using previously defined criteria. The BW was calculated as the distance from the CEJ to the alveolar bone crest minus the clinical attachment loss at that site. Results: At periodontally healthy sites with PD of <4mm, the average BW was 2.17+2.21mm which is consistent with previous histologic reports. At sites with moderate disease (PD of 5-7mm) the average clinical BW was 0.23+1.77mm and at advanced disease sites (PD >7mm) the average BW was 1.67+2.82mm apical to the identifiable crest of the alveolar bone. Across all healthy and diseased sites, the average BW was 1.28+2.34mm. Conclusions: At clinically healthy proximal periodontal sites, the clinical biologic width approximates that previously observed histologically on autopsy samples. As probing pocket depth and clinical attachment loss increases, clinically measurable BW decreases due the apical migration of the base of the pocket below the measurable radiographic levels of buccal and lingual alveolar bone. These data suggest that the accurate determination of the BW becomes more difficult with advanced periodontal disease.	
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131	Abstract Title:	Short- and medium-chain fatty acids exhibit antimicrobial activity for oral microorganisms
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Abstract:

This study assessed the antibacterial activity of short-, medium-, and long-chain fatty acids against various oral microorganisms. Short-chain fatty acids [C1-C6], medium-chain fatty acids [C8-C12], and long-chain fatty acids [C14-C16>] were investigated for antimicrobial activity against *Streptococcus mutans*, *S. gordonii*, *S. sanguis*, *Candida albicans*, *Aggregatibacter actinomycetemcomitans*, *Fusobacterium nucleatum*, and *Porphyromonas gingivalis*. The data demonstrated that the fatty acids exhibited patterns of inhibition against oral bacteria with some specificity that appeared related more to the bacterial species than the general structural characteristics of the microorganism. As a group the fatty acids were much less effective against *C. albicans* than the oral bacteria, with effectiveness limited to hexanoic, octanoic, and lauric acids. Formic, capric, and lauric acids were broadly inhibitory for the bacteria. Interestingly, fatty acids, that are produced as metabolic end-products by a number of these bacteria, were specifically inactive against the producing species, while substantially inhibiting the growth of other oral microorganisms. The results indicate that the antimicrobial activity of short-chain fatty acids (SCFAs), medium-chain fatty acids (MCFAs), long-chain fatty acids (LCFAs) could influence the microbial ecology in the oral cavity via at least 2 potential pathways. First, the agents delivered exogenously as therapeutic adjuncts could be packaged to enhance a microbial-regulatory environment in the subgingival sulcus. Second, it would be the intrinsic nature of these fatty acid inhibitors in contributing to the characteristics of the microbial biofilms, their evolution, and emergence of species within the biofilms.

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132	Abstract Title:	Analysis of Single Nucleotide Polymorphisms (SNPs) in the JNK and IKKβ genes and Implications in the Development of the Metabolic Syndrome
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Abstract:

In the United States, an epidemic of obesity-related diseases continues to erupt. An aggregation of factors including insulin insensitivity, obesity, hypertension, diabetes and dyslipidemia can be seen in one in four members of society and is now known as the metabolic syndrome. Resulting from the synergy of these symptoms, patients are at a heightened risk for premature morbidity and mortality. Understanding the genetics of the metabolic syndrome may lead to new therapeutic approaches and better management of its components. This study will use a randomized, controlled design to examine 400 subjects in Eastern Kentucky that fit criteria for the metabolic syndrome. Saliva samples will be collected, with genotyping of DNA samples for kinases associated with the insulin insensitivity pathway, JNK-1 (rs7086275 and rs10857561) and IKK β (rs3747811). Individuals will be assigned to one of two behavior modification groups (comprised of diet and physical exercise): immediate self-management intervention or delayed self-management intervention six months after data collection. Differences in high sensitivity c-reactive protein (hs-CRP) levels (measured before and after intervention) will be used to classify subjects in intervention-responsive or non-responsive groups. These results will be blindly compared to the genotyping findings in the SNPs being analyzed. The findings will undergo statistical analysis with either an acceptance of the working hypothesis that one or more of the SNPs are associated with a qualitative difference in the response of metabolic parameters following the behavioral intervention (especially hs-CRP), as well as other parameters, or the inability to reject the null hypothesis that there is no association.

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Dentistry Oral and Poster Presentation Abstracts
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133	Abstract Title:	Association Analysis of AXIN2, MSX1, and PAX9 with Palatally Displaced Canines
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Abstract:		
<p>Objective: Palatally displaced canines (PDCs) erupt ectopically lingual to the line of occlusion. Studies have shown that PDCs often occur together with other tooth anomalies, such as reduced tooth size and agenesis. Many genes influence tooth development, patterning, and agenesis including AXIN2, MSX1, and PAX9. We hypothesized that these genes may also effect canine displacement and/or impaction. To test this, single nucleotide polymorphisms (SNPs) located within or near the AXIN2, MSX1 and PAX9 genes were genotyped and accessed for association with a PDC phenotype. Methods: DNA was isolated from buccal swabs of 143 Caucasian orthodontic patients (52-affected, 91-control). TaqMan[®] genotyping was utilized for the allelic discrimination of AXIN2 (rs7591, rs2240308, rs3923086), MSX1 (rs12532), and PAX9 (rs10141087, rs17176643) genotypes on the Roche LightCycler480. PDC phenotypes were determined by radiographs (pan-oral and occlusal). Departures from Hardy-Weinberg equilibrium were assessed using Person's chi-square test. Chi-Square analysis was utilized to evaluate the potential association of SNP alleles with a PDC phenotype. Results: All SNPs analyzed did not depart from Hardy-Weinberg equilibrium. The Chi-Square analysis was calculated using a co-dominant mode of inheritance. None of the results were significant at an alpha of 5%. Conclusions: The null hypothesis could not be rejected for SNPs rs7591 (AXIN2), rs2240308 (AXIN2), rs3923086 (AXIN2), rs12532 (MSX1), rs10141087 (PAX9), and rs17176643 (PAX9). This indicates that the products of these genes play no detectable role in PDCs within the power of this study using these SNPs in this particular sample.</p>		
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Supported by: E. Preston Hicks Endowed Chair Indiana University David Bixler Fund Southern Association of Orthodontics Grant		
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134	Abstract Title:	Which domains of the "dental home" do parents find most important?
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Author(s):	E. Travis, Department of Pediatric Dentistry, U of Kentucky K. Mathu-Muju, Department of Pediatric Dentistry, U of Kentucky	
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Abstract:		
<p>Introduction: The American Academy of Pediatric Dentistry (AAPD) supports the "dental home", a 7-domain care strategy for pediatric and special needs patients. A dental home can help prevent dental caries, the most prevalent childhood disease in the United States. Additionally, proper oral health habits acquired in childhood can improve overall health later in life. However, there are no significant findings on parental awareness of the dental home concept. Parents are vital in enforcing positive habits in children. Without parental education and compliance, professional care programs are ultimately ineffective. Therefore, study aims are to: 1) examine parent familiarity with the "dental home" and 2) determine which domains parents find most important. Methods: 416 parents completed a 42-item survey developed from a Dental Home Index. Descriptive statistics, Chi-square analysis, and Fisher's exact test were used; P-values were calculated comparing parents who have heard of the dental home and those who have not. Results: The majority (>83.3%) responded to all survey items as being "somewhat" or "very" important. Only 16% of those surveyed indicated any familiarity with the "dental home" concept. Significant variation between familiar and unfamiliar groups occurred for some survey items (9 of 42). Conclusions: (Pending) 1) Parents find aspects of each domain of the dental home important. 2) Most are unfamiliar with the concept. 3) Those familiar place greater value on public integration of health information. Greater efforts to educate parents about the "dental home" could bring better awareness of the importance of complete oral health care for the child.</p>		
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Supported by: Research Scholar Grant, University of Kentucky College of Dentistry, 2009-2010		
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Dentistry Oral and Poster Presentation Abstracts
6th Annual CCTS Spring Conference
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135	Abstract Title:	Predictors of Temporomandibular Disorders in Patients Receiving Oral Sleep Appliance Therapy
Author(s):		
C.V. Perez, DDS, Orofacial Pain Center College of Dentistry, University of Kentucky		
J.L. Burris, M.A, Department of Psychology University of Kentucky		
D.A. Falace, DMD, Orofacial Pain Center College of Dentistry, University of Kentucky		
R. de Leeuw DDS, PhD, Orofacial Pain Center, College of Dentistry, University of Kentucky		

Abstract:

Objectives: To identify predictors of temporomandibular disorder (TMD) in patients using a mandibular advancement device (MAD) for obstructive sleep apnea treatment. Methods: Retrospective chart review of 90 adult obstructive sleep apnea patients (46% female, average age 54.8 years ± 12.9). Data were obtained at baseline (prior to MAD delivery) and follow-up (six months post-MAD delivery). Masticatory muscle pain (MUSCLE), temporomandibular joint pain (JOINT), joint noises (NOISE) and interincisal opening (OPEN) were assessed at each visit. Demographic (age, sex), self-report (grinding/clenching, presence of TMJ pain, TMJ pain severity, presence of muscle pain, muscle pain severity), and clinically observed (tooth wear, muscle pain, TMJ pain, joint noises, interincisal opening) were considered potential predictors. Statistical Analysis: Multivariate linear regression analysis was performed using baseline variables to predict TMD signs at follow-up. All predictors were entered simultaneously. Results: The following R² values were obtained: MUSCLE: 76.4%, TMJ: 16.1%, OPEN: 60.3%, and NOISE: 60.7%. With the exception of TMJ, a statistically significant amount of variance was explained in each model (p < .01). Predictors of MUSCLE: self-reported TMJ pain severity (β=.625, p=.012), self-reported muscle pain severity (β=.649, p<.001), TMJ pain upon examination (β=1.099, p<.001). Predictors of JOINT: age (β=.330, p=.031), grinding/clenching (β=.299, p=.044), tooth wear (β=.252, p=.089). Predictors of OPEN: interincisal opening upon examination (β=.463, p=.001). Predictors of NOISE: age (β=.174, p=.09), joint noises upon examination (β=.497, p<.001), tooth wear (β=.178, p=.08). Conclusion: TMD signs may develop with the use of MAD. Multiple demographic, self-report, and clinically observed variables - measured prior to treatment initiation - may help predict the development of TMD signs in obstructive sleep apnea patients treated with MAD.

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136	Abstract Title:	Association Analysis of Single Nucleotide Polymorphisms (SNPs) Within The Interleukin-IL-1β-Converting Enzyme Gene (ICE/Caspase1) and Neuropathic Pain (NP)
Author(s):		
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F. Porto, Orofacial Pain Center, U of Kentucky		
G. Falco-Alencar, Center for Oral Health Research (COHR) and the Hereditary Genomics Laboratory, U of Kentucky		
L.A. Morford, Center for Oral Health Research (COHR) and the Hereditary Genomics Laboratory, U of Kentucky		
J.P. Okeson, Orofacial Pain Center, U of Kentucky		
J.K. Hartsfield, Jr., Division of Orthodontics, Center for Oral Health Research and the Hereditary Genomics Laboratory, U of Kentucky		

Abstract:

Objective: Studies have suggested the pro-inflammatory cytokines, such as IL-1β and the pathways that lead to their release, play role in neuropathic pain (NP). P2RX7 is an ATP-regulated membrane protein found upstream in the biological pathway which leads to IL-1β activation. When ATP binds with P2RX7, a membrane pore is opened, facilitating the exchange of Ca⁺⁺ ions. The increased intracellular Ca⁺⁺ activates IL-1β-converting enzyme (ICE/Caspase 1), which cleaves inactive pro-IL-1β into the active IL-1β. The objective of this study was to determine whether specific genetic variations in the Caspase1 gene are associated with NP. Our null is that there is no association of the SNPs within or near the Caspase1 gene and NP. Method: DNA was isolated from saliva obtained from 29 NP patients and 16 control subjects. SNPs within the Caspase 1 gene, rs530537 and rs1613367, were genotyped using Taqman™ methodology on the Roche Lightcycler™. SNPs were analyzed for Hardy Weinberg Equilibrium (HWE). The Yates Chi Square was used for association analysis with a co-dominant model of inheritance, with significance set at p<0.05. Result: The data presented in this poster reflect only an interim analysis of preliminary findings on a small subject number, with the projected final recruitment ~200-300 individuals/group. Both SNPs were in HWE. The interim Yates Chi square analysis (with 2 degrees of freedom) and p-values for rs1613367 and rs530537 were x²=0.483 p=0.785 and x²=0.106 p=0.948, respectively. Conclusion: The number of study subject currently enrolled is insufficient to draw any significant conclusions at this time. Additional subject enrollment is underway.

Supported by: University of Kentucky E. Preston Hicks Endowed Chair and Research Funds provided by University of Kentucky Orofacial Pain Program
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137	Abstract Title: Systemic Inflammatory Responses of Gestational Diabetes (GDM) and Periodontal Disease (PD)
Author(s):	M.J. Steffen, College of Dentistry, U of Kentucky K.F. Novak, College of Dentistry, U of Kentucky C. Atkins, College of Dentistry, U of Kentucky J.E. Ferguson, Medicine, Obstetrics, U of Kentucky M.J. Novak, College of Dentistry, U of Kentucky J.L. Ebersole, College of Dentistry, U of Kentucky
Abstract:	
<p>Gestational diabetes is one of the more common metabolic disorders that can affect pregnant women. Previous studies have demonstrated a link between diabetes and the risk/severity of periodontitis. The hypothesis of this study was that women with GDM have a greater risk of PD and these diseases would have an additive/synergistic effect on the incidence of adverse pregnancy outcomes. OBJECTIVE: To document the inflammatory/immune responses of GDM+PD+ women to identify mediators that might elucidate the biologic linkage of these diseases and pregnancy outcomes. METHOD: 347 women were enrolled in the study: GDM+PD+ (Gp 1 n= 69), GDM+PD- (Gp2 n= 104), GDM-PD+ (Gp3 n= 55) and GDM-PD- (Gp4 n= 119). Subjects were recruited at 28-34 weeks of gestation from UK's Maternal Fetal Medicine/Bluegrass High Risk Obstetrics Clinic. Periodontal examinations were performed and serum analyzed for IL-1β, IL-6, MCP-1, TNFα, adiponectin, MMP-9, sE-selectin, s-ICAM, s-VCAM, CRP, fibrinogen and IgG antibody to <i>Aa</i>, <i>Cr</i>, <i>Fn</i>, <i>Pg</i>, <i>Pi</i>, <i>Pm</i> and <i>Td</i>. RESULTS: Adiponectin levels were different (p<0.001) in Gp4 compared to women with GDM. In contrast, fibrinogen (p=0.001), and antibody levels to <i>Cr</i> (p=0.005), <i>Fn</i> (p=0.04), <i>Pg</i> (p=0.001) <i>Pi</i> (p=0.001), and <i>Pm</i> (p=0.033) were elevated in PD women compared to Gp4. The adverse birthing events were primarily related to GDM in this population, irrespective of PD. Elevated levels of serum IL-1β, TNFα, E-selectin, s-ICAM and fibrinogen (at least p<0.04) were related to adverse birth outcomes. CONCLUSION: The results show that GDM is significantly associated with adverse birth outcomes, albeit, it did not appear that PD provided an additive impact on this clinical outcome. Initial results suggest that selected systemic biomarkers may profile the risk of adverse birth outcomes in these women.</p>	
Supported by: NIH award: RR02145	
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138	Abstract Title: Medicaid Dental Utilization by Pre-School Children in Kentucky in 2006-2007
Author(s):	Judith Skelton, Division of Public Health Dentistry, Center for Oral Health Research, U of Kentucky Michelle J. Steffen, Center for Oral Health Research, U of Kentucky Jeffrey Talbert, College of Pharmacy, U of Kentucky M. Raynor Mullins, Division of Public Health Dentistry, Center for Oral Health Research, U of Kentucky James Cecil, Division of Public Health Dentistry, Center for Oral Health Research, U of Kentucky Robert Kovarik, Division of Public Health Dentistry, Center for Oral Health Research, U of Kentucky Jeffrey L. Ebersole, Center for Oral Health Research, U of Kentucky
Abstract:	
<p>Objectives: There is clear evidence that substantial disparities in oral health exist in the population, primarily associated with racial/ethnic minorities and his-torically underserved rural populations. These disparities reflect the socioeconomic interlacing of low education and low per capita income. The resulting populations of children are generally eligible for the federal Medicaid program to provide both medical and dental care. The objective of this report was to describe the characteristics of Medicaid dental utilization by pre-school children, 0-5 years of age, in Kentucky. Methods: The data were derived from the statewide Medicaid/KCHIP claims database for the 2006-07. Linear regression analysis for dental utilization and the various county demographic parameters were obtained. Results: The results demonstrated that overall utilization of dental services by children approximated 20% of the eligible population between 0 and 5 years of age, at a level of only 5% in the 1st year of life up to 40-50% in the 5th year of life. It was noted that these rates were generally irrespective of the region of the state, number of dentists/10,000 population in the county, median per capita income for the county, average education level for the county, and prevalence of Medicaid eligible children in the county. Conclusions: These results support a critical problem in the level of dental care for the youngest most vulnerable individuals in our population. This lack of early attention to oral health would be expected to lead to a significant negative impact on lifelong oral health, educational attainment of the children, and societal and economic success of the communities.</p>	
Supported by: State Dental Director in the Kentucky Oral Health Program in the Cabinet for Health and Family Services. We acknowledge support and cooperation of the Kentucky Medicaid Program for access to the dental utilization dataset. We also acknowledge Darren Hen	
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139	Abstract Title:	Genetic Analysis to Study Class III Malocclusion in Families from Brazil and Colombia
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L. Otero, Pontificia Universidad Javeriana, Bogota, Colombia
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S.F. Oliveira, Department of Genetics and Morphology, Universidade De Brasilia, Braslia, Brazil
J.K. Hartsfield, Jr., Division of Orthodontics and Hereditary Genomics Laboratory, University of Kentucky College of Dentistry

Abstract:

Objectives: The purpose of this study was to investigate the potential genetic linkage of chromosome 11 to Class III skeletal malocclusion within two populations from South America: Brazil and Colombia. Microsatellites, D11s1886 and D11s4204, were previously implicated in linkage to Class III (LOD 2.0 and 1.8, respectively) by Frazier-Bowers et al. 2009. Our study focused on the 11q22.2-q22.3 chromosomal region and genotyped single nucleotide polymorphisms (SNPs) between/near D11s1886 and D11s4204 (SNPs: rs666723, rs578169, rs12416856 and rs1386719). The null hypothesis was that there is no genetic linkage between Class III skeletal malocclusion phenotype and the presence of specific alleles of these SNPs. **Methods:** A pedigree for each family was constructed. The affected status of family members was determined by dental charts, cephalometrics, facial and dental photos, and/or dental models. Biosamples were collected from affected and unaffected members from each family and genomic DNA was isolated for genotyping. SNP analysis on purified DNA was performed using TaqMan Genotyping Assay Kits in the Roche LightCycler 480[®]. The program MENDEL was used to estimate genetic linkage, due to its ability to properly account for the multiple-marriage loops. This program computes the maximum likelihood estimation of recombination rates, the log of the odds score (LOD score) and an estimated genetic risk(s) assessment. **Results:** LOD scores were obtained for all SNPs genotyped, ranging from -1.94 to -7.17. **Conclusions:** There is strong support against linkage of Class III malocclusion with selected polymorphic SNPs within 11q22.2-q22.3.

Supported by: E. Preston Hicks Endowed Chair in Orthodontics and Oral Health Research.

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Mentor or Senior Author / e-mail: Hartsfield, Jr., J. K. / james.hartsfield@uky.edu

140	Abstract Title:	Novel bioactivity of the polyunsaturated fatty acids against oral bacteria
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Author(s): CB Huang, Center for Oral Health Research, College of Dentistry, University of Kentucky
JL Ebersole, Center for Oral Health Research, College of Dentistry, University of Kentucky

Abstract:

Introduction: Omega-3, 6, -7, -9 polyunsaturated fatty acids (PUFAs) provide numerous health benefits and are important nutrients, widely used as dietary or nutritional supplements with demonstrated numerous benefits, including as an anti-inflammatory particularly linked to atherosclerosis. While these PUFAs have been suggested to be able to improve oral health through reduction in inflammation through elevations in these fatty acids in serum and cellular membranes, information is lacking with regards to the potential that these fatty acids could directly impact the survival and growth of the oral bacteria that trigger the chronic inflammatory responses. **Methods:** Omega-3, 6, -7, -9 fatty acids, such as, eicosapentanoic acid (EPA), docosahexanoic Acid (DHA), $\hat{1}\pm$ -linolenic acid (ALA), $\hat{1}^3$ -linoleic acid (GLA), linoleic acid (LA), arachidonic acid (ARA), palmitoleic acid (PA), and oleic acid (OA), their fatty acid ethyl esters, GLA-EE, LA-EE, ARA-EE, PA-EE, OA-EE, and their fatty acid methyl esters, GLA-ME, LA-ME, ARA-ME, PA-ME, OA-ME were investigated for antimicrobial activity against oral pathogens *Streptococcus mutans*, *Aggregatibacter actinomycetemcomitans*, *Fusobacterium nucleatum*, *Porphyromonas gingivalis* and *Candida albicans*. Various concentrations of the fatty acids, their methyl and ethyl esters were tested against various oral pathogens in 96-well plates and blood-agar plates. The plates were incubated anaerobically or aerobically at 37°C for 48 hours. The colony forming units (CFU) were counted and the percentage of inhibition was determined. **Results:** This study demonstrated a novel bioactivity of Omega-3, 6, -7, -9 PUFAs, such as eicosapentanoic acid (EPA), docosahexanoic Acid (DHA), $\hat{1}\pm$ -linolenic acid (ALA), and their ester derivatives. Our experimental data indicated that these PUFA and their ester derivatives exhibited strong antibacterial activity against various oral pathogens, such as *S. mutans*, *C. albicans*, *A. actinomycetemcomitans*, *F. nucleatum*, and *P. gingivalis*. **Conclusion:** This study suggested that Omega-3, 6, -7, -9 PUFA could have a positive therapeutic effect for improving oral health via their antibacterial activities.

Supported by: Grant R41DE17265-01 from the NIH/NIDCR

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141	<p>Abstract Title: Preproenkephalin-Encoding HSV-Based Vector Attenuates Mechanical Hypersensitivity of Orofacial Inflammation</p> <p>Author(s): R. J. Danaher, Center for Oral Health Research, U of Kentucky C. S. Miller, Department of Dentistry Oral Health Practice, U of Kentucky F. Ma, Department of Physiology, U of Kentucky L. Zhang, Department of Physiology, U of Kentucky C. Wang, Department of Oral Health Practice, U of Kentucky C. Carlson, Department of Psychology, U of Kentucky K. N. Westlund, Department of Physiology, U of Kentucky</p> <p>Abstract: Background and Objective: Chronic orofacial pain (OFP) is common worldwide, adversely influences quality of life, and imposes substantial healthcare costs. Our objective was to test the efficacy of recombinant herpes simplex virus (HSV)-based gene transfer for the alleviation of inflammatory OFP in a rat model. Methods: Complete Freund's Adjuvant (CFA) was injected into the right masseter muscle of male Sprague-Dawley rats. The same muscle was injected with an HSV-based vector (KHPE) encoding human preproenkephalin and an IFA booster to prolong inflammation, 3 and 7 days post CFA injection, respectively. Inflammatory hyperalgesia was assessed by measuring the mechanical threshold on the shaved masseter skin region using Von Frey fibers by an observer blinded to treatments. Results: KHPE injections delivered the vector to the trigeminal ganglia and significantly improved hypersensitive nociceptive behavioral responses to mechanical stimuli within 6 days of inoculation through 3 weeks. Discussion and Conclusions: Overexpression of met-enkephalin potentially reduced orofacial pain responses mediated by trigeminal (V) sensory nuclear complex neurons. Substantial progress in preclinical studies using HSV-based vectors has demonstrated that direct gene transfer to sensory nerves at peripheral sites below the neck selectively interrupts nociceptive neurotransmission or interferes with underlying processes contributing to maintenance of persistent pain. The findings presented here suggest HSV-based vectors can be expanded to address chronic OFP conditions.</p> <p>Supported by: NIH/NCRR grant 2P20RR020145-06 and University President's and Dean's Funds Primary Presenter / e-mail: Danaher, R.J. / rjdana0@uky.edu Mentor or Senior Author / e-mail: Westlund, K. N. / kwhigh2@email.uky.edu</p>
142	<p>Abstract Title: Controlled Release System for Delivery of the WLBU2 Antimicrobial Peptide</p> <p>Author(s): R. Peyyala, Center for Oral Health Research, U of Kentucky J. McClanahan, Center for Biomedical Engineering, U of Kentucky J.L. Ebersole, Center for Oral Health Research, U of Kentucky D. Puleo, Center for Biomedical Engineering, U of Kentucky K. Novak, Center for Oral Health Research, U of Kentucky</p> <p>Abstract: Oral bacteria initiate localized inflammatory processes leading to bone resorption in conditions such as periodontitis and peri-implantitis. Bacterial burden can most effectively be minimized by site-specific, controlled release of anti-infective agents incorporated in biodegradable materials such as the polymer blend system of cellulose acetate phthalate and Pluronic F-127 (CAP/PF-127). OBJECTIVE: The objective of this study was to determine the efficacy of de-novo engineered antimicrobial peptide WLBU2 incorporated in CAP/PF-127 on <i>S. gordonii</i>, a commensal early colonizer that coaggregates with other bacteria to initiate biofilm formation. METHODS: The combined effect of CAP/PF-127 at 3.125% and WLBU2 at 50, 25 and 12.5 μM, with or without equimolar sucrose for enhancing the interaction of WLBU2 with the bacteria, was examined on <i>S. gordonii</i> suspension prepared at 0.3 OD₆₀₀ in phosphate buffer (PB). Controls included treatment of bacteria in PB, 3.125% polymer, or 3.125% polymer supplemented with 50 μM sucrose. After 30 min treatment, ten-fold serial dilutions of each suspension were grown on blood agar. The data was calculated as number of bacterial colonies compared to control. RESULTS: The number of <i>S. gordonii</i> colonies was negligible with 50 μM WLBU2 treatment alone, but was decreased to only approximately 1000-fold reduction in the presence of 3.125% CAP/PF-127. However, addition of 50 μM sucrose restored peptide activity most likely due to reducing interaction between polymer and WLBU2 thereby making it more available to kill bacteria. CONCLUSIONS: CAP/PF-127 can be effectively used to deliver WLBU2 to kill <i>S. gordonii</i>.</p> <p>Supported by: U.S. Army (W81XWH-09-1-0461) and NIH/NIDCR DE018177. Primary Presenter / e-mail: Peyyala, R. / rpeyy1@email.uky.edu Mentor or Senior Author / e-mail: Novak, K. / novakk@adea.org</p>

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143	Abstract Title:	Influence of Age, Gender, and Geographic Origin on Cephalometric Measurements
Author(s):		
L. A. Morford, Center for Oral Health Research and the Hereditary Genomics Laboratory, U of Kentucky		
B. Ganim, U of Kentucky		
D. Fardo, College of Public Health, U of Kentucky		
J. K. Hartsfield, Jr., Division of Orthodontics, Center for Oral Health Research and Hereditary Genomics Laboratory, U of Kentucky		

Abstract:

Objective: We examined differences in 14 unique facial measurements from three distinct geographic regions to test the hypothesis that a subject's age, gender and geographic origin, alone or in combination, would influence their cephalometric measurements. Methods: This study utilized previously collected data from the studies of S.N. Bhatia (London, England), Riolo (Michigan) and Saksena (Indiana). Fourteen unique cephalographic measurements were compared between the three geographic origins (studies) including: ANB, ANS-ME, ANS-PNS, AR-GO, AR-GO-ME, AR-PG, BA-S-N, CO-GN, CO-GO, N-ANS, S-BA, S-N, SNA and SNB. The data was compiled, and analyzed for statistical relationships between each measurement and (1) geographic origin (study location), (2) gender, (3) the combination of age and gender, and (4) the combination of age and geographic origin, with significance defined at ($p < 0.05$). Results: Geographic origin significantly influenced all 14 cephalometric parameters as determined by a statistical comparison of the data from each study to one another. In contrast, only four measurements (ANB, AR-PG, S-BA, and SNB) were significantly influenced by gender. The combination of age and gender influenced eleven of the fourteen measurements including: ANS-ME, ANS-PNS, AR-GO, AR-PG, BA-S-N, CO-GN, CO-GO, N-ANS, S-BA, S-N, and SNB. A combined age and geographic origin analysis suggested an influence on all cephalometric measurements except the S-BA measurement of these parameters. Conclusions: These results support our hypothesis that age, gender and geographic origin, alone or in combination, can effect cephalometric measurements. In the future, we would like to develop a series of standardized measurements, which take into account parameters of age, gender and origin, for use in growth predictions and research.

Supported by: University of Kentucky College of Dentistry E. Preston Hicks Endowed Chair
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144	Abstract Title:	Association of Marginal Ridge Discrepancies (MRDs) and Root Angulation Errors
Author(s):		
J.K. Hartsfield, Jr., Division of Orthodontics and Hereditary Genomics Laboratory, U of Kentucky		
C.L. Crane, Private Practice, Former Resident in Department of Orthodontics and Oral Facial Genetics, Indiana U		

Abstract:

Objective: To test if there is no association between marginal ridge discrepancies (MRDs) and root angulation errors in cases treated in an University graduate orthodontics clinic. Methods: One hundred consecutive cases meeting the following inclusion criteria were examined: treatment fully completed, with pre-treatment and post-treatment casts and panoramic radiographs available. Cases with unerupted teeth, interproximal restorations, or extracted premolars were excluded. The pre-treatment and post-treatment root angulations and marginal ridge relationships were scored on both sides of the arch between the mandibular-second-premolar and mandibular first-molar, and mandibular-first-molar and mandibular-second-molar, according the American Board of Orthodontics Objective Grading System criteria. Logistic models were used to test for association between the direction of root angulation observed in either tooth with the respective marginal ridge score. A comparison was then made to determine how often root angulation errors were present in one or both of the teeth when there was a MRD. Results: Although they can occur independently, when a MRD was present, the odds of having a root angulation error in an adjacent tooth was 4.7 times greater pretreatment and 4.1 times greater posttreatment. When there was a MRD in the positive direction, the associated root angulation error was 5.8 times more likely to be in the positive direction pretreatment (Odds Ratio = 5.8, 95% Confidence Interval = (2.5, 13.9), $p < .001$), and 7.5 times more likely posttreatment (Odds Ratio = 7.5, 95% Confidence Interval = (4.4, 12.8), $p < .001$). Conclusions: There was a significant association between MRDs and root angulation errors. This data is important to clinicians because it indicates that if cases are finished with properly aligned marginal ridges, the odds of having root angulation errors are significantly reduced.

Supported by: Indiana University School of Dentistry Student Research Subcommittee
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145	Abstract Title:	Salivary Biomarkers in Health, Gingivitis, and Periodontitis
	Author(s):	J. Stevens*,Center for Oral Health Research,U of Kentucky C.S. Miller,College of Dentistry, U of Kentucky M Al-Sabbagh,College of Dentistry, U of Kentucky D. Dawson III,College of Dentistry, U of Kentucky J. Schuster,College of Dentistry, U of Kentucky B. Fuller,Center for Oral Health Research,U of Kentucky D. Kryscio, Department of Statistics, U of Kentucky M.V. Thomas,College of Dentistry, U of Kentucky J.L. Ebersole,Center for Oral Health Research,College of Dentistry,U of Kentucky
	Abstract:	Recent national initiatives from the NIDCR have focused on exploring the proteome of saliva and determining the potential for this fluid to provide diagnostic utility for oral and systemic diseases. A goal would be to develop point-of-care devices that could more effectively use saliva in dental and medical healthcare settings. OBJECTIVE: This study examined select biomarkers in periodontally healthy, gingivitis, and periodontitis patients to identify specific patterns of the analytes that reflect changes in oral inflammation and destructive disease. METHOD: Full mouth periodontal evaluations were conducted and whole unstimulated saliva was collected from 42 periodontally healthy subjects, 65 gingivitis patients, and 214 periodontitis patients (age 21-65, 206 females, 115 males; 227 Caucasian, 94 black). Levels of IL-1 β , IL-6, MMP-8, PGE2, TNF α , IFN α , and albumin were measured via Luminex/ELISA. RESULTS: While there was a substantial variation in the levels of these various analytes in saliva from healthy subjects, IL-1 β , MMP-8, IL-6, and IFN α significantly identified the periodontitis patients. Both PGE2 and IL-1 β levels were elevated in gingivitis, albeit only PGE2 was comparable to levels in periodontitis. Smoking increased the levels of selected analytes in health, gingivitis and periodontitis. Moreover, this environmental factor appears to alter the correlation of the salivary analytes with the extent/severity of periodontitis. Finally CART and Random Forest Analysis strategies identified profiles of salivary biomarkers that accurately determined the existence of periodontal disease, and provided some insight regarding the extent of disease. CONCLUSION: The results demonstrate the likely utility of salivary biomarkers for monitoring oral health. The distinctive patterns of salivary biomarkers should also be capable of providing an adjunctive benefit in identifying the transition to periodontitis for early intervention and patient management. Supported by NIH U01 DE017793, P20 DE020145.
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146	Abstract Title: Using PreViser as an Oral Health Management Tool within the Dental Team
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Abstract: PreViser was introduced into the student patient care program late in the spring semester. When a patient is screened for treatment at the University of Kentucky College of Dentistry, a medical history, dental history, soft and hard tissue exam, periodontal probing and necessary radiographs are completed. The data collected from the examination process is entered into PreViser. A dental hygienist helps with the data collection and entry to expedite the process. The PreViser program assesses the patients risk for periodontal disease, caries, and oral cancer using a 5 point scale that is easily explained to the patient. The results of PreViser are discussed with the patient and recommendations are given to decrease risk when needed. Each patient is given a print out of their results. Adding a hygienist to the team has improved the efficiency of the process. The hygienist has made it possible to complete more PreViser reports and improve the accuracy of the data. Students assisting in data collection and entry have made the process easier to manage. Currently there is a dental practice management software that is integrated with PreViser and populates some of the fields required for the report. The software at the University of Kentucky College of Dentistry does not integrate with PreViser which adds time to the process. Several studies have discussed the use and validity of periodontal risk assessment tools in dental practice. 1,2,3,4 This program addressed the need for improving the students exposure to, knowledge of, and use of risk assessment in the dental setting. The benefits of utilizing PreViser are many. Monitoring the patients risk over time can help the student and faculty discuss appropriate treatment recommendations with the patient. The patient is better educated about their dental health and risk for disease. Recommendations can be made to the patient to reduce risk. Risk can be assessed over time with feedback provided to the patient. 1. Page RC, Krall EA, Martin J, Mancl L, Garcia RI. Validity and accuracy of a risk calculator in predicting periodontal disease. J Am Dent Assoc 2002; 133(5): 569-576. 2. Persson GR, Mancl LA, Martin J, Page RC. Assessing periodontal disease risk. J Am Dent Assoc 2003; 134(5): 575-582. 3. Page RC, Martin J, Krall EA, Mancl L, Garcia R. Longitudinal validation of a risk calculator for periodontal disease. J Clin Periodontol 2003; 30: 819-827. 4. Page RC, Martin JA, Loeb CF. The Oral Health Information Suite (OHIS): its use in the management of periodontal disease. J Dent Educ 2005; 69(5): 509-520.	
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Dentistry Oral and Poster Presentation Abstracts
6th Annual CCTS Spring Conference
College of Dentistry Research Day
April 21, 2011

147	Abstract Title: Improving Student Outcomes through Ongoing Course Revision in a Local Anesthesia Course	
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Author(s):	P. Stein, College of Dentistry	
	S. Challman, College of Dentistry	
Abstract:		
<p>Local anesthesia is taught to 55-57 dental students prior to their clinical rotations with dental patients. This is a pivotal course in the dental education of all students. Mastering the abilities to give profound and painless anesthesia is of paramount importance in the successful career of dental practitioners. Additionally, this is their initial encounter with patients in a clinical setting and the first opportunities to put into practice their dental training. Local anesthesia is taught in a concentrated format with interprofessional faculty. Fifteen hours of instructional material were presented by faculty comprised of a pharmacologist, pharmacist, anatomist, dentist and oral surgeon. Ten instructors, nine dentists and one registered hygienist certified to administer local anesthesia worked with groups of students in the student dental clinic for the lab portion of the class. The maximum number of students in any student group was six. This provided for a very intimate and closely supervised instructional setting. Student grades are based on a practicum at the completion of the lab portion of the class and a final written exam. Students performance on the final exam dramatically improved over the five year period while the exam was changed 10% or less each succeeding year. The number of As in the class increased from seven to thirty-five over the five year period. Previously, the course was taught at the end of an eleven month first year curriculum. All upperclassman had finished their course work and left for summer break while the first year students were participating in the local anesthesia course. Many students are suffering from fatigue and burn out and looking forward to summer break. Consequently, the students seemed to have trouble concentrating on the course. Likewise, faculty members are often anticipating a much needed break. Placement of the course in the fall at the beginning of the second year curriculum was an opportunity for both groups to have renewed energy and enthusiasm. The course was supplemented with the use of Blackboard, a learning management tool, to disseminate lecture materials and post grades. Echo 360 lecture capture, provided audio and slide presentation recordings for all lectures, and posted playback formats for both computer and mobile devices. Turningpoint TM Audience Response System (ARS) was utilized daily to engage students and provide practice through quizzes and self checks while also recording attendance. Student satisfaction data was gathered through online course evaluations, technology usage and focus group discussions. Students rated the learning materials used in the course and evaluated instructors lecturing techniques. Types and benefits of various technologies including audience response systems, lecture capturing and Blackboard were also evaluated.</p>		
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148	Abstract Title:	
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	Abstract:	
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	Mentor or Senior Author / e-mail:	

149	Abstract Title:	
	Author(s):	
	Abstract:	
	Primary Presenter / e-mail:	Hoffman, D.
	Mentor or Senior Author / e-mail:	

150	Abstract Title:	Case Report: Use of Distraction Osteogenesis for Maxillary Hypoplasia
	Author(s):	A. Ray, The University of Kentucky Oral and Maxillofacial Surgery E. Aldridge, The University of Kentucky Oral and Maxillofacial Surgery J. Van Sickels, The University of Kentucky Oral and Maxillofacial Surgery
	Abstract:	Applications of Distraction Osteogenesis in Dentistry -Alveolar distraction for ridge augmentation -Craniofacial syndromes -Sleep apnea -Dentofacial deformities -Facial trauma reconstruction -Condyle reconstruction Case Report -51 yof -Overjet of -10mm - Unstable maxillary denture - Lefort I ostectomy with application of distractors -Latency period of 5 days -1.0mm distraction per day - Total distraction of 8mm -2.5 months consolidation Discussion -Consists of three phases 1. Latency 2. Distraction 3. Consolidation - Alternative technique to lengthen bones in the maxillofacial region and augment the alveolus - Numerous factors influence the quantity and quality of bone -Variety of internal and external devices
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151	Abstract Title:	Simple Bone Cyst and Complex Odontoma: An Unusual Clinical and Radiographic Presentation
	Author(s):	M. Gayheart, Department of Oral and Maxillofacial Surgery, University of Kentucky J.D. Bird, Department of Oral and Maxillofacial Surgery, University of Kentucky J. Dembo, Department of Oral and Maxillofacial Surgery, University of Kentucky D. Damm, Department of Oral Pathology, University of Kentucky
	Abstract:	A 28 year old male presented to the University of Kentucky Oral and Maxillofacial Surgery Clinic by referral from a general dentist in the local community. The patient's chief complaint was acute pain in the upper right jaw. Clinical and radiographic evaluation revealed carious teeth #1 and 16, horizontally impacted # 17, and vertically impacted #32. Further radiographic evaluation revealed mixed radiopaque and radiolucent lesion of the left ramus. The lesion extended superiorly to the left coronoid process. Radiopaque product was noted in the lesion. The external border of the lesion is well defined. Multiple deep bone Biopsies were taken from cystic region and sent to the University of Kentucky Oral Pathology service for microscopic examination and diagnosis. Microscopic diagnosis was determined as Simple Bone Cyst and Complex Odontoma.
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