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<th>Salivary soluble CD14 and elastase as co-biomarkers for periodontal assessment</th>
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**VP-30** Reducing Pain on Needle Insertion: Proposal for an Alternative Technique. PHAN A. HUNG* (Faculty of Odonto-Stomatology, University of Medicine and Pharmacy at HCM City, Vietnam).

When delivering local anesthesia to children, reducing pain on needle insertion is of major concern to both patients and providers. The purpose of this investigation was to evaluate the efficacy of an alternative procedure as compared to the conventional one in reducing pain. A total of 134 children, aged between 3 and 12, underwent dental treatment in the pediatric dental clinic were assigned into two groups. In both groups, local anesthesia was given, using a 30-gauge needle and 2% lidocaine. Eighty subjects received the alternative procedure and 54 the conventional one. The proposed procedure consisted in quickly and gently pulling the buccal mucosa, which is first to the mucobuccal fold, into the tip of the needle to a depth of 1 to 1.5 mm, at the injection site. Topical anesthesia gel was not used before injection in this procedure, while it was implied in the conventional one. Pain-related behavior on needle insertion was rated on video tapes by two independent evaluators, using the Sounds, Eyes and Motor scale. Inter-rater reliability was established at 90%. The results, as analysed by Chi-square test, showed that the alternative procedure was able to reduce significantly pain-related behavior as compared to the conventional one, with a percent of 99% and 59.2% pain-free insertion, respectively (p < 0.001). It is, therefore, concluded that the alternative technique for needle insertion should be considered for use in order to reduce pain and fear related to local anesthesia in children.

**VP-31** Salivary Soluble CD14 and E-selectin as Biomarkers for Periodontal Assessment. J. J. H. N. K. EL LADEH and E. E. COOPERETI (Faculty of Dentistry, The University of Hong Kong, Hong Kong).

Mixed saliva contains antigens from gingival crevices or periodontal pockets, and thus may be recognized as a means of overall assessment of periodontal conditions. Our early studies showed that neopterin concentration in gingival crevicular fluid, a marker of HIV-1 in 1/3 of HIV-1 disease and that salivary soluble CD14 (sCD14) may be an indicator of oral and periodontal health. This study was to determine sCD14 and neopterin concentration in saliva and evaluate whether these markers could be used for an overall periodontal assessment. The participants were 61 non-smoking adults with untreated chronic periodontitis. Salivary soluble CD14 and neopterin concentrations were measured in all participants. In parallel, full-mouth probing depth (PDI) and bleeding on probing (BOP) were recorded by the Florida Probe*. Stimulated whole saliva was collected by a standard spitting method immediately prior to clinical examination. sCD14 levels (ng/ml) were determined by ELISA. Neopterin concentration was analyzed by a specific ELISA. The study showed that sCD14 and neopterin levels were significantly higher than in healthy controls (p < 0.001). In contrast, full-mouth probing depth (PDI) was higher than in healthy controls (p < 0.001). The study suggests that salivary neopterin and sCD14 levels may serve as biomarkers for an overall periodontal assessment. Supported by the Hong Kong Research Grants Council (RGC, HKU 73/01B).

**VP-32** Molecular Detection of Actinomyces Species in Root Canals Medicated with Calcium Hydroxide and Sepposertin, Gaoyun Tang*, Lakshman P. Samaranayake, H-Kong Yip* (*Oral Bio-sciences, Faculty of Dentistry, The University of Hong Kong, Hong Kong).

Calcium hydroxide and Sepposertin are common endodontic medicaments. However, their *in vivo* antimicrobial efficacy has been questioned, as the constituents of the complex delivery system may hamper or neutralize their action. Therefore, we evaluated the *in vivo* efficacy of calcium hydroxide (Calcium Hydroxide), and Sepposertin in eliminating intra-canal bacteria, particularly Actinomyces spp. during endodontic treatment. A total of 31 single-rooted teeth with primary root canal infections were studied immediately after opening the canals and subsequently one week after medication with either Cu(OH)2 (25 specimens) or Sepposertin (6 specimens). Whole bacterial genomic DNA was isolated directly from samples and, PCR performed to detect total bacteria. The variable regions of 16S rDNA of bacteria were amplified and labeled with digoxigenin for further hybridization and detection of Actinomyces spp. A total of seven alginogenetic probes specific for A. horae, A. gerencserae, A. viscosus, A. meruli, catalase-negative A. naeslundii species 1 and 2, catalase-positive A. naeslundii species 2 and A. odontolyticus were used to detect A. viscosus and Sepposertin in 22 of 31 medicated root canals (Calcium Hydroxide): 17, Sepposertin: 5). PCR results showed that in each tooth, there was a significant difference between Cu(OH)2 and Sepposertin in inactivating endodontic bacterial growth. The bacterial load in 23 of 31 examined canals was totally or partly eradicated either by Cu(OH)2 (18) or Sepposertin (5). Thus, only six canals (Cu(OH)2: 5; Sepposertin: 1) were sterile one week after medication and the other 25 canals (Cu(OH)2: 17, Sepposertin: 8) showed increased bacterial load after medication. Hybridization results showed higher detection frequency and quantity of both A. odontolyticus and A. gerencserae after medication. No significant correlation was found between a quantitative increase in the bacterial load after medication and the other selected species. No correlation between one-week-apart samples was observed. The result suggests that calcium hydroxide and Sepposertin may be used as an inter-appointment medicament in endodontic therapy may not effectively distill all root canals. However, further investigations with large clinical samples are needed to confirm or refute our observations. (Supported by the RGC (10229/94C) and CRCG (720904/K13))

**VP-33** Glass-ionomer-based containing materials: Effects of pH on surface texture. MA MOHAMMED TAHERI* and AU YAP. (Faculty of Dentistry, National University of Singapore).

The objective of this study was to determine the effect of pH on the surface texture of commercial glass-ionomer containing restorative materials. The materials evaluated included a composite (Dystrok AP), a microwooden (Bastraflit) and two highly viscous glass-ionomer cements (Fujix IX and Ketac Molar). A composite resin (Elshet-X) was used for comparison. Forty-two specimens (5 mm thick x 3 mm long x 2 mm deep) were cut for each material tested and were stored in 1000 ppm NaOCl and 0.08% chlorhexidine. Eighty subjects received the alternative procedure and 54 the conventional one. The proposed procedure consisted in quickly and gently pulling the buccal mucosa, which is first to the mucobuccal fold, into the tip of the needle to a depth of 1 to 1.5 mm, at the injection site. Topical anesthesia gel was not used before injection in this procedure, while it was implied in the conventional one. Pain-related behavior on needle insertion was rated on video tapes by two independent evaluators, using the Sounds, Eyes and Motor scale. Inter-rater reliability was established at 90%. The results, as analysed by Chi-square test, showed that the alternative procedure was able to reduce significantly pain-related behavior as compared to the conventional one, with a percent of 99% and 59.2% pain-free insertion, respectively (p < 0.001). It is, therefore, concluded that the alternative technique for needle insertion should be considered for use in order to reduce pain and fear related to local anesthesia in children.

**VP-34** Restoration of root-filled teeth by General Dental Practitioners in Klang Valley, Malaysia. Y. L. LEOH*, C. G. TOH, H. LIP, WILSON (Dept of Conservative Dentistry, University of Malaya, 2United Dental Institute, King's College London, UK).

Selecting an optimum restorative modality to restore root-filled teeth is often complicated by the many clinical situations currently available. The aim of this study was to survey the use of these systems and techniques by General Dental Practitioners (GDPs) in the Klang Valley, Malaysia. A questionnaire survey of 19 malpractice case records mailed in November 2002 to 605 GDPs in the Klang Valley area. The questionnaire sought detailed of the use of posts, the types of posts and core materials used, the GDP's understanding of the effects of posts and also preference for final restoration. 204/47% of the practitioners responded to the survey. The restoration of root-filled teeth was normally undertaken within 1-2 weeks of root canal therapy by 46% of the practitioners. 52% of the GDPs used posts routinely in the restoration of root-filled anterior teeth - the corresponding figure for posterior teeth being 30%. While cast, non-precious metal posts and prefabricated posts were used in almost equal frequency to restore anterior teeth, the use of prefabricated posts predominated in the restoration of posterior teeth. Glass ionomer cement was the preferred cement to late posts; 45% of the practitioners were of the opinion that posts did not play any important role in the endodontic treated teeth; an equal number of practitioners thought otherwise. Regarding core materials, composite resin was preferred in anterior teeth (64%) and amalgam in posterior teeth (50%). The majority of the practitioners restored root-filled teeth by means of porcelain-fused-to-metal crowns while one third of the practitioners used direct composite and amalgam in the anterior and posterior region respectively. It is concluded that, in general, the practitioners surveyed had a fair understanding of the principles involved in the restoration of root-filled teeth except, possibly in relation to the need to establish a durable coronal seal as soon as possible after the placement of a root filling and the effects of posts on the restored tooth root. This study was supported by University Malaya F078/2007.

**VP-35** A Study of Dental Arch Changes in Children from 3 to 5.5 years of age. NGO T.Q., LAM*, HOANG T. HUNG (Faculty of Odonto-Stomatology, University of Medicine and Pharmacy at HCM City, Vietnam).

The aim of this longitudinal study was to determine the dimensional changes and the growth pattern of the dental arches in the period from 3 to 5.5 years old and to clarify if there are significant differences between males and females. The sample consisted of Vietnamese children, free from facial anomalies and with sound dentition, (N=117, 54 males, 62 females, aged 3 years at the start of the study). Impressions were taken at ages 3; 3.5; 4, 4.5; 5 and 5.5 years. Study casts were used for dental arch width and length measurements by one examiner based on the method described by Chang et al. (1998). A total of 8 measurements were obtained from each dental arch, 10 for width and 4 for length, using a digital caliper. ANOVA test was used to assess total changes in dental arch dimensions from 3 to 5.5 years old. T-test was applied for annual changes assessment and comparison between sexes. The results showed that the dental arches of Vietnamese children were wide and short as compared to Caucasian ones (Moore et al., 1969; van der Linden, 1979). Growth patterns were larger in girls, in upper than in lower arches. From 3 to 5.5 years old, the increase in width of dental arches was significantly (1.33mm and 1.35mm in upper arch; 1.33mm and 1.27mm in lower arch, in boys and girls respectively, p<0.001). On the other hand, changes in length and total, and annual were not significant. In 3 to 4.5 years length increased slowly, then slightly reduced until 5.5 years old while the width showed a rapid increase during this same period. From 3 to 5.5 years old, the growth pattern of the dental arches of Vietnamese children could be described as follows: the width increased significantly and steadily while the length showed a slight decrease from 4.5 to 5.5 years of age, in both sexes and both upper and lower arch.