

48 The Cross-Sectional Morphology of C-Shaped Canals in Mandibular Molars. W.L. CHAI* and Y. L. THONG (Faculty of Dentistry, University of Malaya, Malaysia)

The aim of this study was to evaluate the cross-sectional canal morphology and minimum widths of buccal and lingual canal walls in 19 extracted mandibular second molars and one mandibular third molar with C-shaped roots and C-shaped canal orifices. One second molar was of Malay origin and 19 second and third molars were of Chinese origin. The roots were mounted in clear cold curing epoxy resin blocks and sectioned transversely at 1mm intervals. The number and cross-sectional shape of canals were evaluated and widths of canal walls were measured in 154 cross-sections using an image analyzer that was linked to a zoom microscope. Each root was fused at the buccal surface and had a deep groove running coronal-apically at the lingual surface. Variations in canal number were observed along the length of each root and 12 different configurations were identified in 20 roots. The most prevalent were types 1-2 and 1-2-1, with each type occurring in four roots. Of the 91% of cross-sections that showed C-shaped cross-sectional configurations, 27% had complete C-shaped canals and 64% showed incomplete C-shaped canals. The mean value for the minimum width of the lingual canal wall was 0.58 ± 0.21 mm and for the buccal wall was 0.96 ± 0.26 mm. This suggests that there is a higher risk of root perforation at the thinner lingual walls of C-shaped canals during shaping and post canal preparation procedures. Both buccal and lingual canal walls were frequently narrower at mesial locations. This study showed that C-shaped roots have variable cross-sectional canal morphology with the minimum width frequently occurring at the mesial wall of the lingual groove. This study was supported by the University of Malaya, F 0133/99.

49 Utilization of oral health services amongst Malaysian university students. MARLENA K and ABDUL-KADIR R* (Malacca Oral Health Division, Ministry of Health and University of Malaya, Kuala Lumpur, MALAYSIA)

The objective of any effort to utilize dental service by an individual has been assumed to be one to maintain one's oral health either in the absence of any oral problems or, to find solutions or relief when problems existed. A retrospective study was undertaken to describe the utilization pattern of a dental clinic providing services to University Malaya students. In so doing, secondary data comprising of 1899 dental records spanning over a three-year period (1998-2000) and meeting the pre-set selection criteria were identified. Data included in the analysis were demographic profile of the students who visited the clinic, reasons for seeking care, actual treatment received and their attitudes towards follow-up appointments. Results from the study showed that majority of those who visited the clinic were young adults between 20 - 30 years old (80%) and females (61.5%). Students were also found to have a higher tendency to visit the clinic in their second year of university education. Contrary to the general belief, there was no difference in proportion between Art-orientated and Science-based students. Routine check up was found to be the more common reason for seeking care (38.1%), but conservative treatment was the more often given (40%). More than three-quarter of the students (80.4%) did not have any specific request when seeking care for the first time. Although 71.4% follow-up appointments were given, less than 10% completed their treatment schedules. In conclusion, findings from the study suggests that majority of the students who visited the clinic are without oral health problems requiring extensive treatment. Majority appears to take the opportunity to check their oral health status before leaving the university. Given the above, it is therefore suggested that more promotive and preventive programs and less emphasis to curative care, need to be designed to encourage best practices in maintaining good oral health for a life time among these young adults.

50 Expression of Vascular Endothelial Growth Factor In Palatal Wound Healing. A LIM*, BI BAY, KWC FOONG, W TAN, G YIP and CC LING (National University of Singapore & National Dental Centre, Singapore.)

Studies have shown that the level of vascular endothelial growth factor (VEGF), a potent angiogenic factor, is increased during wound healing but none have involved the healing of palatal mucosa. PURPOSE: To determine if VEGF is involved in, and to study the expression of VEGF and its receptor FLK-1 during palatal soft tissue wound healing. METHODS: 48 New Zealand White rabbits were used. A 2mm by 4mm wound was made on the oral mucosa overlying the hard palate. Harvesting of the wounded and a similar sized control tissue on the contralateral side was done 1, 3, 5, 7, 14, 21, 30 and 60 days post-wounding. The expression of VEGF and FLK-1 was studied with immunohistochemistry. Angiogenic activity was also quantified morphometrically by counting blood vessels under light microscopy. RESULTS: VEGF and FLK-1 are upregulated during the early phase of wound healing, reaching a peak between post-wounding days 3 and 5. Their expression was co-located to endothelial cells, mast cells, macrophages and keratinocytes. CONCLUSION: VEGF is upregulated during the early phase of palatal soft tissue wound healing. The increase in angiogenic activity is likely to be due to the increase in VEGF and FLK-1 levels.

51 Profile Changes of Putative Periodontal Pathogens after Non-surgical Periodontal Treatment. R.Y.L. MAK* K.Y. ZEE, W.K. LEUNG and E.F. CORBET (Faculty of Dentistry, University of Hong Kong)

The aim of the study was to investigate changes of eight putative periodontal pathogens 3 months after non-surgical periodontal treatment in patients with moderate-to-advanced periodontal disease. A total of 14 patients were recruited. Clinical parameters including presence of supragingival plaque (PI%), bleeding on probing (BOP%), probing pocket depth (PPD) and probing attachment level (PAL) were recorded at baseline and 3 months after treatment. Subgingival plaque samples were taken at baseline and at 1 month from the 2 deepest sites in each quadrant of each patient using sterile paper points. A 16S rRNA based polymerase chain reaction microbial identification method was used to detect 8 putative periodontal pathogens: *A. actinomycetemcomitans* (*A.a.*), *B. forsythus* (*B.f.*), *C. rectus* (*C.r.*), *E. corrodens* (*E.c.*), *P. gingivalis* (*P.g.*), *P. intermedia* (*P.i.*), *P. nigrescens* (*P.n.*) and *T. denticola* (*T.d.*). All patients were treated non-surgically. At baseline, the prevalence of 7 of the 8 putative pathogens at a subject level were very high (around 90-100% for *T.d.*, *E.c.*, *P.g.*, *C.r.*, *B.f.*, *P.n.* and *P.i.*) and 56% for *A.a.* At a site level, the prevalence of *C.r.*, *P.g.* and *T.d.* were very high (98%, 96% and 96% respectively). The co-occurrence of *T.d./P.g.*, *T.d./C.r.* and *P.g./C.r.* were highly associated giving odds ratios of 30.7, 43.7 and 38.5 respectively. Clinically after 3 months, mean reductions of PI% (84% to 34%) and BOP% (92% to 36%) were recorded. Mean PPD reductions for moderate (4-6mm) and deep (>6mm) pockets were 2.5mm and 4.3mm respectively. Mean PAL gains for moderate and deep pockets were 1.2mm and 2.1mm respectively. The presence of the microbial complex (*C.r./P.g./T.d.*) was significantly associated with deeper PPD at baseline (6.8mm vs. 5.4mm when absent). Comparing sites with the complex to those without at 1 month after treatment, deeper residual PPD (4.1mm vs. 2.5mm), less PPD reduction (3.1mm vs. 4.2mm) and less PAL gain (1.6mm vs. 2.3mm) were found in the 3-month examination. These differences were statistically significant with $p < 0.05$ using t -testing. In conclusion: 7 out of the 8 putative pathogens were frequently detected in the subgingival plaque of this group of periodontitis patients and disruption of a closely associated complex (*C.r./P.g./T.d.*) by 1-month was associated with better treatment outcomes at 3 months following non-surgical periodontal treatment.

52 Color stability of Core Materials: A Spectrophotometric study. SETHU SWAMINATHAN* WATTANAPAYUNGKUL PRANEE, LOH POEY LING. (Department of Restorative Dentistry, Faculty of Dentistry, NUS)

To evaluate the color stability of composite core materials used in dental restorative procedures. Six types of composite dental core materials were selected for evaluation (Bisco-Natural, Bisco-Opaque, Corestore-White, Corestore-Universal, Bisco-Coreflo and TiCore). Disks of these materials of 15mm diameter and 3mm thickness were fabricated using standardized procedure. The samples were stored in 37°C at 100% humidity. The $L^*a^*b^*$ values of each disk was recorded using a spectrophotometer (C2600D, Minolta, Japan). Readings were taken every consecutive day for 14 days. The data were then analyzed using ANOVA for significance in color change. There was a significant difference in color, ΔE between Corestore-White and the other core materials studied. Bisco-Opaque also showed significant difference in ΔE to both Corestore-Universal and Bisco-Coreflo. ΔL of Bisco-opaque was significantly different from that of Corestore-Universal and Bisco-Coreflo. There is a significant difference in Δa^* value among the various material studied. The Δb^* values of Corestore-white was significantly different from all the other materials evaluated. The Δb^* value of Bisco-natural was found to be significantly different from both Corestore-universal and TiCore. The materials evaluated showed significant difference in color in the first 4-6 days. Hence core material does change color. Selection of core material is of importance, as their color influences the final aesthetic appearance in all ceramic restorations.

53 Irradiation or Autoimmune Disease Induced Hyposalivation: Impact on oral health. K.C.M. LEUNG*, E.H.N. POW, A.S. MCMILLAN, W.K. LEUNG, M.C.M. WONG, C.S. LAU, T.M.Y. MOK, D.L.W. KWONG. (University of Hong Kong, Hong Kong SAR, China)

Head and neck irradiation and Sjögren's syndrome (SS) are two common causes of hyposalivation. Hyposalivation is often associated with increased incidence of oral diseases. The objective of this study was to compare the oral condition of patients with salivary gland hypo-function caused by irradiation or an immunological reason. Nasopharyngeal Carcinoma (NPC) survivors treated by irradiation ($n=38$, disease-free > 1 year), SS sufferers ($n=51$) and 60 age and gender matched controls (C) were studied. Xerostomia, oral mucosal lesions, plaque index, dental caries, periodontal disease (CPI), loss of attachment (LOA), prosthetic status and need were assessed. Data were analyzed using ANOVA/Kruskal-Wallis/Chi-squared tests. NPC survivors and SS sufferers had a high prevalence of xerostomia (NPC: 95%, SS: 84%, C: 10%, $p < 0.001$) while the NPC group also had atrophic changes in the tongue (NPC: 28%, SS: 8%, C: 0%, $p < 0.01$). Significantly more missing teeth and root caries were found in NPC survivors than the other two groups (NPC: 12, SS: 8, C: 5, $p < 0.001$; NPC: 0.84, SS: 0.30, C: 0.23, $p < 0.05$ respectively). Both hyposalivation groups had similar but significantly higher DMFT scores than the controls (NPC: 16.32, SS: 13.69, C: 9.80, $p < 0.001$). No statistically significant differences were detected in plaque index, prosthetic status and need in all three groups. The oral condition of NPC survivors were generally comparable to SS sufferers. They appeared to suffer from more root caries and atrophic tongue changes. Supported by CRCG-HKU.