

THE NATIONAL ORAL HEALTH RESEARCH INITIATIVE (NOHRI)

The National Oral Health Research Conference 2008 organised by the Oral Health Division, Ministry of Health Malaysia, identified the need to establish a multiagency initiative to identify oral health research priorities for the country and to better manage the oral health research agenda in the country. The establishment of the National Health Research Initiative (NOHRI) in the 10th Malaysia Plan (10 MP) was mooted by the Oral Health Division in 2010 towards enhancing evidence-based policy decisions in the oral healthcare delivery system in the country. Stakeholders with oral health research interests from various organisations in the country which are currently represented in NOHRI are as follows:

- Oral Health Division, Ministry of Health Malaysia
- Faculty of Dentistry, University of Malaya (*UM*)
- Faculty of Dentistry, National University of Malaysia (*UKM*)
- Faculty of Dentistry, Science University of Malaysia (*USM*)
- Faculty of Dentistry, International Islamic University of Malaysia (*UIAM*)
- Faculty of Dentistry, Islamic Science University of Malaysia (*USIM*)
- Faculty of Dentistry, Mara University of Technology (*UiTM*)
- Faculty of Dentistry, International University of Malaysia (IMU)
- Faculty of Dentistry, Asian Institute of Medicine, Science & Technology (AIMST)
- Faculty of Dentistry, Malaysia Allied Health Science Academy (MAHSA)
- Dental Corp, Ministry of Defence
- Oral Cancer Research and Coordinating Centre, University Malaya (OCRCC)
- Malaysian Dental Association (MDA)

The establishment of NOHRI is timely to better manage the oral health research agenda in the country in the following ways:

- **Oral health research priorities** of relevant stakeholders in oral health in the country are identified and collated. These priorities will be taken into consideration in the national health research priority setting.
- A mechanism that support collaboration for oral health research.
- Better bargaining power for research funds for oral health research initiatives.

- A national database on oral health research priorities in line with 5-year Malaysia Plans for **monitoring the status of uptake and conduct** of identified oral health research needs. This database will be updated annually.
- A compilation of **oral health research abstracts** to facilitate sharing of research findings.
- The facilitation of selection of oral health research projects that reflect local and national needs for training undergraduate and postgraduate students.

PROPOSED ORAL HEALTH RESEARCH PRIORITIES FOR PERIOD 2011-2015

No.	Group	A	B	C	D	E	F
		National Problems (Document referred to)	What do you need to know? (Purpose/Objectives)	Research Scope	Gaps & Needs (Rationale)	Suggested Research Areas	Expected Output
1	Burden of Disease	Oral Disease/Condition ^{1,2}	<ol style="list-style-type: none"> 1. Prevalence of oral disease and their contributory factors, load of illness, risk factors to oral disease and health seeking behaviors 2. Predictors for caries risk amongst at risk population groups 	<ol style="list-style-type: none"> 1. To determine the prevalence of oral disease/conditions and to identify contributory factors. 2.To determine the relationship between amount of smoking and caries risk 3.Predictors for caries risk amongst at risk population groups 	<ol style="list-style-type: none"> 1.High caries prevalence 5-year olds: 76.2 % (2005), 87.1% (1995) 2.Special needs children: Caries prevalence 78.2 % (2008) 	<ol style="list-style-type: none"> 1. Epidemiological studies for dental caries for evidence to support policy change. 2. Identify markers for caries risk assessment among risk groups 	<ol style="list-style-type: none"> 1. Burden of oral diseases and treatment needs 2. Risk factors to oral diseases 3. Identification of barriers to care 4. Data for oral healthcare financing
2	Burden of Disease	Community Oral Health Interventions ^{3,4}	<ol style="list-style-type: none"> 1.Impact of community oral health intervention measures 	<ol style="list-style-type: none"> 1. Prevalence of enamel opacities among schoolchildren 2. Fluoride content of alternative sources of drinking water. 	<ol style="list-style-type: none"> 1. Continuing monitoring of prevalence of enamel opacities (last done in 2001) among 16-year old school children is needed to support the existing programme 2. Data on fluoride content of alternative sources of drinking water is needed for informed choices of drinking water. (A study in Sabah has shown variation in fluoride levels of bottled mineral water). 	<ol style="list-style-type: none"> 1. Epidemiological Study 2.Surveillance Study 	<ol style="list-style-type: none"> 1.Monitoring data on enamel opacities on target groups. 2.Fluoride content in bottled drinking /mineral water/reverse osmosis drinking water.

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3.	Burden of Disease	Late detection (Stage III & IV) of oral cancer, high prevalence among Indians ⁵ Increasing case among young people with no habit ⁶ Dietary nutrient intake is significantly lower among oral cancer cases ^{7,8}	To assess level of awareness on characteristics and risk factors of oral cancer among the public; to determine nutritional intake and well-being of oral cancer patients; to evaluate the diagnostic value of detection tools for early detection; to identify biomarkers significant in oral cancers; to develop new anti-cancer drug against oral cancer	To undertake multi-centre, hospital and community-based case-control, epidemiological and molecular studies on oral cancer patients on: 1. Mouth cancer awareness 2. Nutritional intake 3. Diagnostic tools for early detection 4. Molecular biomarkers 5. Anti-cancer drug	1. Oral cancer in Stages III & IV: 58.7% 2. High prevalence among Indians: 3 rd and 7 th most common cancer 3. Young people without habit having oral cancer: 8.3% 4. Lack of data on effect of disease/treatment on nutritional status	Epidemiological studies on success of different awareness programs; changes in nutrient intake among cancer patients; intervention for potentially malignant disorders and oral cancer; evaluation of effectiveness of different diagnostic tools for early detection; molecular studies on identification of potential biomarkers and anti-cancer drugs for oral cancer	1. Increased awareness, early detection and higher survival 2. Data on effect of disease/treatment on nutritional status, leading to formulation of policies for general well-being of patients 3. Identification of biomarkers and development of anti-cancer drug

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4.	Health Systems	The need to develop a package for oral healthcare in 1Care.	Evidence and data for construct of package	<p>1. Cost analysis, cost benefit and cost effectiveness analysis of oral healthcare interventions, Costing studies of dental procedures and cost per patient/attendance for primary and specialist care</p> <p>2. Econometric modeling for a basic oral healthcare package; weighted capitation studies</p>	<p>1. Limited costing data on delivery of oral health care</p> <p>2. Limited data on out-of-pocket expenditure for oral healthcare</p> <p>3. Lack of statistics to model a basic oral healthcare package.</p>	<p>1. Cost analysis, cost benefit and cost effectiveness analysis of oral healthcare interventions,</p> <p>2. Costing studies of dental procedures and cost per patient/attendance for primary and specialist care</p> <p>3. Econometric modeling for a basic oral healthcare package; weighted capitation studies</p>	<p>1. Cost analysis data to be used in budgeting and oral health care planning, relative values of costs of dental procedures and reimbursements in oral healthcare financing.</p> <p>2. Data is useful for working out oral healthcare packages.</p> <p>Basic package that will ensure the coverage of the poorer segments of the population</p>
5.	Health Systems	The need to strengthen oral healthcare services for adults in Malaysia	Health seeking behaviors and barriers to care	Evaluation of dental services - focus on accessibility and utilization of services by adults. Look at current adults services, barriers, manpower needs.	Limited dental care services for adults and concern about dental health of adults as they age.	<p>1. Oral Health Seeking Behaviors of Adults</p> <p>2. Utilization of oral healthcare by adults</p> <p>3. Barriers of oral healthcare amongst adults</p>	Improvement and expansion of dental services especially for adults without compromising current services for children.

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6.	Health Systems	Limited data on oral health status and treatment needs of population with special needs, elderly and indigenous populations of Sabah and Sarawak.	Oral health status and treatment needs of population with special needs, elderly and indigenous populations of Sabah and Sarawak.	Health Needs Assessment	Limited data on oral health status and treatment needs of population with special needs, elderly and indigenous populations of Sabah and Sarawak.	Studies on oral health status and treatment needs of population with special needs, elderly and indigenous populations of Sabah and Sarawak.	Useful data for planning oral healthcare marginalized and underserved population groups.
7.	Health Systems	Evidence is needed for reviewing oral healthcare policies for specific target groups of population.	Gains on population health as a result of changes in activities in oral healthcare delivery.	Oral health policy research	Lack of policy impact studies to provide evidence for initiating substantial change in oral healthcare policies.	Impact of extending coverage of adult groups and evaluation of its impact on the toddler programme.	Evidence for reviewing oral healthcare policies for specific target groups of population.

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8.	Health Systems	Oral Healthcare for HIV Patients	<p>1. Clinical profile of saliva and sub-gingival microbes of HIV patients</p> <p>2. Epidemiology of oral infections in HIV patients</p> <p>3. Oral health-related quality of life (OHRQOL) among the HIV –infected subjects.</p>	<p>1.To evaluate the quality of saliva and the oral health status of HIV-infected persons</p> <p>2.To evaluate the periodontal clinical and microbiological profile of the sub-gingival microbiota of HIV sero positive subjects with chronic periodontitis.</p> <p>3.To determine the relative frequency of opportunistic oral infections and to co-relate the incidence with the viral load in HIV infected persons.</p> <p>4.To determine the role of various salivary factors including sIgA in the. development of various opportunistic oral infections.</p> <p>5.To evaluate the oral health-related quality of life (OHRQOL) among the HIV – infected subjects.</p>	Lack of data for improving oral healthcare management of HIV patients	Clinical epidemiology study	Evidence to improve the oral healthcare management of HIV patients

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9.	Health Systems	Health Tourism ⁹	Supporting data to further develop dental tourism in Malaysia	Identification of novel determining factors for world class and highly effective dental tourism in Malaysia	Dental tourism is still new in Malaysia Many aspects need to be learnt to enhance this new sector	Economic study	Data for enhancing dental tourism in Malaysia
10.	Health Systems	Competency evaluation of dental auxiliaries	1.Perception of stakeholders towards the level of knowledge, skills and attitude of ex-students (graduates) of the institution. 2.To what extent is there a need for further training? 3. The level of job satisfaction and expectation of dental auxiliaries	1. To determine level of knowledge, skills and attitude of trained auxiliaries 2. To determine perception/expectation of stakeholders 3.To determine level of job satisfaction and expectation of dental auxiliaries	To ensure a competent auxiliary workforce as the country rises to meet the increasing demand for them.	KAP Study	Recommendations for improving the effectiveness of teaching-learning activities/ approaches to improve students' performance in tandem with current needs and expectations
11.	Empowerment	Empowerment for better oral health in children and women ^{10,11,12,13,14}	1. Does maintenance of the mothers' oral health reduce the risk of PLBW in Malaysian women? 2. Parental perceptions towards different aspects of their child's oral health 3.Level of caries risk in children	1.To investigate the association between PLBW and Periodontal disease. 2. To determine parental perceptions towards child's oral health. 3. To identify predictors for dental caries in children.	Need for improved uptake of oral healthcare services during pregnancy Important to empower parents as they are primary care givers. Reduce oral disease burden in children	Intervention studies Perception studies Clinical epidemiology	Recommendations to augment existing policies for empowering ante-natal mothers, parents and care-givers towards better oral health.

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12.	Healthy Lifestyle	Oral Health Related Quality of Life ^{15,16,17}	<p>1. Burden of disease, social and economic implications of oral diseases/ conditions and its impact on the oral health related quality of life (QoL)</p> <p>2. Baseline data oral health related quality of life</p> <p>3. Benefit of adjunct treatments for improving QoL</p>	<p>1. Baseline data oral health related quality of life</p> <p>2. To develop valid and reliable measures of oral health related quality of life in different population groups</p> <p>3. To evaluate the benefit of adjunct treatments in order to improve QoL</p> <p>4. Identification of novel genes whose expression are required to regulate temporo-mandibular disorders (TMD).</p>	<p>1. No surveillance database on OHRQoL</p> <p>2. Need to enhance the margin of effectiveness of adjunct treatment for QoL.</p>	Epidemiology studies	<p>Valid and reliable measure of oral health related quality of life</p> <p>Discovery of novel genes for therapeutic intervention of TMD.</p>
13.	Healthy Lifestyle	Professional Well-being in relation to Occupational Health Related Problems in Public Dental Facilities ¹⁸	The prevalence and risks of occupational health problems among oral healthcare providers in the public sector	To assess the prevalence and risks in relation to occupational health aspects.	Few studies on Occupational Safety and Health (OSH) among dental personnel in developing countries.	Epidemiological and KAP studies	Baseline data for surveillance of occupational health and recommendations for healthy and safe working environment
14.	Health Technology	Traditional and Complementary Medicine in oral healthcare ^{19,20,21}	Alternative medicine in treatment of oral conditions eg. Oral ulcer, periodontal disease and oral cancer.	Investigate therapeutic potential of local herbs and their mechanisms in treatment of oral disease/conditions	Need to explore new therapeutic interventions for the management of oral disease/conditions	Clinical trials	Useful alternative therapeutic regimes for the management of oral conditions

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15.	Health Technology	Oral Tissue Engineering (OTE) ²²⁻³¹	1. Potential of mesenchymal stem cells to restore defects	1. To investigate the role of mesenchymal cell in construction of oral mucosa equivalents (OME). 2. Evaluation of quality of life of OME	There is still a need for improvement in tissue grafting technology to provide a better quality of life to patients who have had defects resulting from surgery.	Clinical trial	Improved technology for oral tissue re-engineering Development of an in-vitro 3D model for various in vitro tests such as biocompatibility test, drug transportation or disease process.
16.	Health Technology	Regenerative Dentistry ³²⁻³⁷	The potential of dental and bone marrow mesenchymal stem cells to repair bone defects.	1. Isolation, expansion and characterization of dental and bone marrow stem cells. 2. Animal model for mandible bone defect 3. Clinical trial for repairing mandible bone defects	Repair and regeneration is a major issue in oral maxillofacial surgery.	Clinical trial	New method for treating mandible bone defects .
17.	Health Technology	ICT Support Systems for oral healthcare ³⁸	1. To construct a data model to represent data and knowledge documented by clinicians related to OMD. 2. To explore individual and integrated ICM using Bayesian and case-based reasoning 3. To evaluate the individual and integrated ICM.	Integrated Intelligent Computing Methods (ICM) in Diagnosing Oral and Maxillofacial Diseases (OMD)	Need for integrating ICM to produce significant differences of probabilities for diagnosing disease.	Intelligent Computing Methods Study	A new integrated ICM that is significant to lead new model for differential diagnosis of clinical decision support system.

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18.	Health Technology	Forensic Dentistry ^{39,40,41}	To establish dental anthropological data that can assist in identifying crime / mass fatality victim(s) from a forensic viewpoint.	Anthropological metrics of the dentition	The lack of dental anthropological data that may assist in forensic identification of victim(s) in cases where there are no dental records of the victim.	Anthropological study	Critical data that can improve recovery and identification of victim(s) in mass fatality events or crime in the absence of dental records of the victim(s).

Note:

- . The above list was proposed by members of the National Oral Health Research Initiative (NOHRI) for the 10 Malaysia Plan Health Research Priority (HRPS – 10): Scoring and Ranking of Research Areas Workshop held at the Institute of Health Management, Ministry of Health, Malaysia from 3 – 4 May 2011.
- The ranking of the accepted research proposals will be uploaded after the completion of the whole cycle for the 10 Malaysia Plan Health Research Priority (HRPS – 10) setting.

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MONITORING ORAL HEALTH RESEARCH IN MALAYSIA

No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
1.	The Staining Effect of Different Foodstuff on Current Aesthetic Restorative Dental Materials	March 2011 Prof. Dr. Ikmal Hisham Ismail, Dr. Maan Ibrahim Al-Marzok & Dr. Hussein ali Al-Wakeel (MAHSA University College)	On-going	
2.	Maximum Aesthetics with Minimal Intervention	March 2011 Prof. Dr. Ikmal Hisham Ismail, Dr. Maan Ibrahim Al-Marzok & Dr. Hussein Ali Al-Wakeel (MAHSA University College)	On-going	
3.	National Oral Health of Adults Year 2010 (NOHSA 2010)	November 2008 (Oral Health Division, Ministry of Health Malaysia, University of Malaya, International Islamic University of Malaysia, Institute of Health Systems Research & Department of Statistics Malaysia) Ministry of Health Malaysia Research Grant: MRG-2010-04	Completed in 2013	Presented at NOHSA 2010 Seminar held at Subang Jaya on 7-10 November 2012 and at FDI Conference in Istanbul 2013

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4.	Drinking water supplies, dietary habits and oral health status of adults in Kelantan	February 2009 (Oral Health Division, Ministry of Health Malaysia)	Completed in 2013	Published in December 2014
5.	An evaluation of the referral of diabetes patients to dental clinics in the Ministry of Health Malaysia	November 2009 (Oral Health Division, Disease Control Division, Family Health Development Division, Public Health Institute Ministry of Health Malaysia)	Completed in 2014	Published in Journal of Public Health Aspects 2014
6.	Dental Practitioners' Perception on the Utilisation of Dental Therapists in Private Dental Practice in Malaysia	May 2010 (Oral Health Division, Ministry of Health Malaysia)	Completed in 2011	Published in the Compendium of Abstract 2012
7.	Molecular Profiles For Tooth Movement Of Straight Wire Appliance During Orthodontic Treatment	2006 Rohaya Megat Abdul Wahab (National University of Malaysia) MOSTI Grant UKM0001366 (2006)		
8.	Developing And Validating A Model For Continuous Quality Improvement In Dental Education	2006 Tuti Ningseh Mohd Dom (National University of Malaysia) FRGS Grant UKM-DD-03FRGS0002-2006		

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9.	Pulp Molecular and GSF Enzymological Profiles of Straight- wire Appliances During Orthodontics Treatment	2007 Rohaya Megat Abdul Wahab (National University of Malaysia) MOSTI Grant 02-01-02-SF0245 (2007)		
10.	Malocclusion and Treatment Needs of 14 year old Yemeni Adolescents: An Epidemiological Investigation	2007 Rasheed Abdal Salam AlMaqtari ¹ , Rahimah Abdul Kadir ² , Norzakiah Zam Zam ³ , Halimah Awang ³ ¹ University of Malaya ² National University of Malaysia ³ University of Malaya University of Malaya Grant: UM/P0222/2007A		
11.	The Regeneration of Dental Hard Tissues from Cultured Rat Tooth Bud Cells	2008 Mohd Nazimi Abd Jabar (National University of Malaysia) MOSTI Grant 02-01-02-SF0508 (2008) UKM0001036		

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12.	Regeneration Of Alveolar Bone Via Tissue Engineering Technique To Facilitate Dental Implant In Atrophic Alveolar Bone - An Animal Study	2008 Roszalina Ramli (National University of Malaysia) MOSTI Grant 02-01-02-SF0497 (2008) UKM0001042		
13.	Produk Semulajadi : Drug Discovery, Delivery And Novel Targets	2008 Shahida Mohd Said (National University of Malaysia) GUP Grant UKM-GUP-TKP-08-22/076 (2008)		
14.	Periodontal Disease Status Among Smokers Versus Non-Smokers And The Impact of Tobacco Cessation In The Dental Clinic	2009 Nurul Asyikin Yahya, Rahimah Abdul Kadir, Asma AlHusna Abang Abdullah, Haslina Rani (National University of Malaysia) Pfizer Grant WS496441 (2009) DD/037/2009		

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No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
15.	NARCC Research Project : Smoking Cessation Program Among Dental Practitioners	2009 Hussain Habil, Amer Siddiq Amer Nordin ¹ , Rahimah Abdul Kadir ² , Nurul Asyikin Yahya ² ¹ University Malaya Centre for Addiction Sciences ² National University of Malaysia UM Grant RG049/09HTM		
16.	Spiritual Enhancement Drug Addiction & Rehabilitation Research (SEDAR)	2009 Rusdi Abdul Rashid ¹ , Mohamad Hussain Habil ¹ , Amer Siddiq Amer Nordin ¹ , Muhsin Mohamed ¹ , Rahimah Abdul Kadir ² ¹ University Malaya Centre for Addiction Sciences ² National University of Malaysia UMRG 072/09/htm (2009)		
17.	Alcohol Use and Psychosocial Correlations among the <i>Orang Asli</i> population in Peninsular Malaysia	2009 Rusdi Abd Rashid ¹ , Hussain Habil ¹ , Amer Siddiq Amer Nordin ¹ , Hatim Mohamed, Muhsin Mohamed ¹ , Rahimah Abdul Kadir ² ¹ University Malaya Centre for Addiction Sciences ² National University of Malaysia UM RU Grant RG049/09HTM		

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No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
18.	Systemic Disorders In Patient With Periodontal Disease In Dental Faculty, Universiti Kebangsaan Malaysia	2009 Badiah Baharin, Nurulhuda Mohd (National University of Malaysia)		
19.	Investigation on Enzymes Activities and Protein of Gingival Crevicular and Salivary Fluids using Competitive ELISA	2010 Rohaya Megat Abdul Wahab (National University of Malaysia) FRGS Grant UKM-DD-03-FRGS0030-2010		
20.	Isolation Of Lactobacillus Periodontally Healthy Subjects And Its Antimicrobiol Activity Against Peridontal Pathogen	2010 Dr. Azizah Ahmad Fauzi, Dr. Badiah Baharin, Pn. Zaleha Shafiei, Dr. Nurulhuda Mohd (National University of Malaysia)		
21.	HPV p16 and p53 Coexpression In Oral Cell Carcinomas	2011 Ahmad Tarmidi Sailan, Dr. Norliwati Ibrahim ¹ , Dr. Ajura Abdul Jalil ² ¹ National University of Malaysia ² Ministry of Health Malaysia UKM-GGPM-TKP-022-2011		

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No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
22.	Cost Of Managing Oral And Maxillofacial Injuries Among Patients Who Were Involved In Motor Vehicle Crash In Teaching Hospitals In Malaysia	<p>2010 Dr. Norlen Mohamed¹, Dr. Muhammad Fadhli Mohd Yusof¹, Dr. Normastura A. Rahman¹, Dr. M. Ismail Ibrahim¹, Dr. Azizah Yusoff¹, Dr. Noor Hayati A. Razak¹, Dr. Nik Hisamuddin Nik Ab. Rahman¹, Dr. Roszalina Ramli², Dr. Rifqah Nordin², Dr. Ismail Saiboon², Dr. Mohd Nazimi Abd. Jabar², Dr. Saripah Habsah Raja Ahmad², Dr. Saperi Sulong, Dr. Amrizal Muhd. Nur</p> <p>¹ Science University of Malaysia ² National University of Malaysia</p> <p>Grant (MIROS) 10-21-0202-003 (DD/001/2010)</p>	On-going and in final phase of project.	
23.	Post traumatic Growth, Quality Of Life, Psychological Distress, Hope And Optimism Of Patients With Head And Neck Cancer And Their Spouses: A Prospective Study	<p>2011 Dr. Rama Krisna Rajandram , Dr. Mohd Nazimi Abd Jabar, Dr. Rifqah Nordin, Dr. Syed Nabil Syed Omar, Dr. Mohd Razif Mohamad, Dr. Hazli Zakaria (National University of Malaysia)</p> <p>UKM-GGPM-TKP-023-2011</p>		

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No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
24.	The Effectiveness Of Morinda Citrifolia (Noni Juice) As An Irrigating Solution To Eliminate Enterococcus Faecalis An – Invitro Study	2011 Dr. Ahmad Faudzi Muharriri (National University of Malaysia) UKM-DIPM-022-2011		
25.	The impact of periodontal disease & treatment on oral health related quality of life.	Prof Dato Dr Wan Mohamad Nasir Wan Othman Dr Haslinda Ramli Puan Nurul Izzah Idham Grant from USIM 2012 (PPP/GP/FPg/STH/30/12012)	In progress	
26.	Evaluation on the performance and perception of graduates on the competencies.	Dr Normaliza Ab Malik Prof Towsnsend Dr Hamid Mohamad Puan Siti Nur Rasyidah Grant from USIM 2012 (PPP/FPg/STH/30/14712)	Completed in 2013	International Conference on teaching and learning Education 2013 (ICTLE'13)
27.	The association between caries prevalence & proportions of salivary Streptococcus Mutans in the 2012 first year BDS students of USIM.	Dr Haslinda Ramli Grant from USIM 2012 (PPP/GS/FPg/STH/30/10512)	In progress	
28.	Development of Cost Modelling for Oral Health Care	Dr Norlela Yacob Grant from USIM 2011 (PPP/FEM-1-16011)	In progress	

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No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
29.	Dentist attitude Towards Duplicate Denture Techniques.	Dr Norlela Yacob Dr Wan Nor Syariza Dr Faizah Abdul Fatah Grant from USIM 2012 (PPP/GS/FPg/STH/30/10612)	In progress	
30.	Dental development timing of permanent teeth using radiographs and Cone-Beam Computed Tomography (CBCT) in Malaysian population	Dr Nazatul Sabariah Ahmad Prof Dato Dr Wan Mohamad Nasir Wan Othman Dr Wan Nor Syariza Grant from KPT (ERGS/1/2012/SKK11/USIM/03/1)	In progress	
31.	Prevalence of Molar-Incisor Hypomineralization (MIH) in Malaysian Population and knowledge of general dental practitioner (GDP) in diagnosing MIH and patient management	Dr Nazatul Sabariah Ahmad Grant from KPT (RAGS/2012/USIM/SKK11/2)	In progress	
32.	Cost effectiveness and the effect of various irrigation solutions on post – operative clinical complications of surgical dissection of lower wisdom tooth.	Dr John Chong Keat Hon Dr Liana Ma Abdullah Grant from USIM 2012 (PPP/GS/FPg/STH/30/10512)	In progress	

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
33.	The association of Salivary Bacteria aciduricity with caries experience	Syatirah Najmi Abdullah Dr Faizah Abdul Fatah Grant from USIM 2012 (PPP/GS/FPg/STH/30/10512)	In progress	
34.	Knowledge, Attitude And Practice Of Smoking Amongst The Trainees And Personnel of Children's Dental Centre & Dental Training College Malaysia.	April 2012 Nurfahana Farah binti Abdullah Dr. Naziah bt. Ahmad Azli Dr. Ahmad Termizi bin Zamzuri. Children's Dental Centre & Dental Training College Malaysia. Research grant – None	Completed in December 2014	Submitted full report to Oral Health Division, Ministry of Health Malaysia and published in Compendium of Abstracts 2014
35.	Comparison of the efficiency of Lignocaine in permanent maxillary tooth removal performed with single buccal infiltration vs. routine buccal and palatal injection.	April 2012 Dr. Ramesh K, Dr. Balamanikanda, Dr. Siva Kumar (AIMST University)	On going	
36.	A comparative study on radiographic analysis of impacted third molars among three ethnic groups of patients attending AIMST Dental Institute, Malaysia.	March 2011 Dr. Sham Kishor, Dr. Balamanikanda, Dr. Ramesh. K, Dr. Santosh Sikri (AIMST University)	Completed, June 2011	Submitted to Dental Research Journal for publication

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
37.	The evaluation of two radiographic methods for age determination of children in a Malaysian population: A retrospective study.	July 2012 Dr. Ramesh K, Dr. Balamanikanda, Dr. Navaneetha (AIMST University)	Completed, September 2012	Submitted to Forensic Science International for publication.
38.	Variations in the number of roots and canals of maxillary first molar among Malaysian population.	Jun 2013 Dr Ahmed Mahmood Ahmed Dr Aws Ali Grant form KPM ERGS (ERGS/1/2013/SKK11/USIM/03/03)	In progress	
39.	Persepsi masyarakat dan Personel Pergigian terhadap pergigian kosmetik dari sudut pandangan Islam (FPg, FSU)	Sept 2013 Dr Faizah Abdul Fatah Dr Ahmad Wifaq (FSU) Dr Norlela Yacob Dr Norazlina Mohamed Dr Diana Dr Haslinda Ramli Grant form KPM RAGS Kod USIM: USIM/RAGS/FPg/36/51413 Kod KPM: RAGS/2013/USIM/SKK11/2	In progress	
40.	Assessment of failure rate between molar bands, bondable tubes and bondable tubes with flowable composite	Dr Azrul Hafiz Abdul Aziz Dr Diana Md Zahid Dr Fitri Ocatavianti Dr Syiral Mastura Dr Ainuddin Yushar	In progress	

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
		Grant from KPM RAGS Sept 2013 Kod USIM: USIM/RAGS/FPg/36/51313 Kod KPM: RAGS/2013/USIM/SKK11/1		
41.	Microbial contamination level of water supply system at the Faculty of Dentistry	Dr Normaliza A Malik Rohazila Hanafiah Prof Dato Dr Wan Mohamad Nasir Grant from USIM	Completed 2012	Sains Malaysia 2013 Indexed Journal
42.	Immunolocalization of cancer stem cell like protein molecules in salivary gland neoplasms	2013 (UM) Dr. Salina Din Prof. Dr. Siar Chong Huat (Supervisor) Grant: PPPC-1	In Progress	
43.	Comparison of nasalance score for standard Malay language between children with repaired cleft lip and palate and normal children	2013 UM Dr. Atika Farrah Bt. Yahya Dr. Siti Mazlipah Ismail (Supervisor) Grant: PPPC-1	In Progress	
44.	Immunolocalization of pro-osteoclastic markers in ameloblastoma	2013 (UM) Dr. Nurmawarnis Bt. Mat Hussin Prof. Dr. Siar Chong Huat Grant: PPPC-1	In Progress	
45.	Facial soft tissue analysis of the adult Malaysian Malay, Chinese and Indian with 3D imaging	2013 (UM) Dr. Lynnora Patrick Majawit Dr. Roziana Razi Prof. Madya Siti Adibah Othman Grant: PPPC-1	In Progress	

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
46.	Prevalence of anxiety and depressive symptoms among oral cancer patients in the Faculty of Dentistry, UM	2013 (UM) Dr. Lisamarie Alice Luhong Sagan Dr. Aung Lwin Oo Grant: PPPC-1	In Progress	
47.	Antitumor effect and apoptosis induction of Phyllanthus amarus and Dracaena cinnabari on oral cancer cell lines in vitro and in vivo.	2013 (UM) Dr Aied Mohammed Hamood Saeed Prof. Dr. Ian Charles Paterson Prof. Dr. Noor Hayaty Abu Kasim Prof. Dr. Rosnah Mohd Zain Grant: University Malaya Research Grant (UMRG)	In Progress	
48.	Development of novel nanohydroxyapatite coated gutta-percha for root canal filling.	2013 (UM) Dr. Zeti Adura Che Ab. Aziz Prof. Dr. Noor Hayaty Abu Kasim Grant: UMRG	In Progress	
49.	Quantification of Pathogens In Periodontally Compromised Type 2 Diabetic and Non Diabetics Receiving Non-Surgical Periodontal Therapy Versus Oral Health Education	2013 (UM) Dr. V. Rathna Devi A. Vaithilingam Dr. Maaz Asad Grant: Peruntukan Penyelidikan Pascasiswazah (PPP)	In Progress	
50.	Effect of non-surgical periodontal treatment in obese patients with chronic periodontitis	2013 (UM) Dr. Syarida Hasnur Safii (Penyelia) Dr. Zohaib Akram Grant: PPP	In Progress	

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
51.	Evaluation of newly formulated osteoprotein-chitosan	2013 (UM) Dr. Nor Adinar Baharuddin Dr. Soher Nagi Mohammed Jayash Grant: PPP	In Progress	
52.	The 5 AGS model in behavioural therapy vs brief advice on smoking cessation delivered by dentists in a dental setting	2013 (UM) Prof. Madya. Dr. Roslan Saub Dr. Nurul Asyikin Yahya Grant: PPP	In Progress	
53.	The microbiological, biochemical, molecular and structural aspects of the effect of selected plant extracts on multi-species biofilms	2013 (UM) Prof. Dr. Zubaidah Hj. Abdul Rahim Mrs. Zaleha Shafiei Grant: PPP	In Progress	
54.	Biochemical and molecular investigation of Jatropha Curcas extract against oral pathogenic bacteria	2013 (UM) Prof. Dr. Zubaidah Hj. Abdul Rahim Mrs. Resni Mona@Siti Nur Rasinah Abdullah Grant: PPP	In Progress	
55.	The Antiplaque activity of pure compound on monospecies and mixed species oral biofilm model	2013 (UM) Dr. Maria Angela Garcia Gonzalez Grant: PPP	In Progress	

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
56.	Medical Bioinformatics	2013 Leong Mee Lian Dr. Choo Siew Who Grant: PPP	In Progress	
57.	Empowering Healthcare workers to manage oral health needs of Institutionalised Elders	2013 (UM) Dr. Jacob John Chiremel Chandy Dr Vinod Kumar Joshi Dr Nor Himazian Mohamed Grant:Community Engagement	In Progress	
58.	PARTNER Flagship project	2013 (UM) Prof. Nasruddin Jaafar Grant: HTMC Flagship Project	In Progress	
59.	Mechanisms of oral carcinogenesis: From homeostasis to drug discovery	2013 (UM) Prof Dr. Ian Paterson Grant: HIR/MoHE	In Progress	
60.	Early detection of potentially malignant and malignant oral mucosal lesions – preventive, clinical and molecular approach	2013 (UM) Dr. Siti Mazlipah Ismail Grant: HIR/MoHE	In Progress	
61.	Contribution of Epstein-Barr virus, cellular signaling pathways and driver mutatuions to the	2013 (UM) Dr. Yap Lee Fah	In Progress	

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
	pathogenesis of nasopharyngeal carcinoma	Grant: HIR/MoHE		
62.	Malaysian Armed Forces Oral Health Survey (MAFOHS) 2011.	Nov 2011 (MOD) Cawangan Pergigian, Bahagian Perkhidmatan Kesihatan, Kementerian Pertahanan.	Completed Dis 2014.	Preparation of manuscripts for publication.
63.	Standard Operating Procedures on Disaster Victim Identification: Forensic Odontology Perspective.	May 2014 (MOD) Brig Jen Dato' Dr Mohd Ilham b. Haron.	Testing of SOP stage.	Preparation for publication.
64.	The effects of xylitol chewing gum on oral environment among army personnel involved in army operation at Malaysia-Thailand border	2011 (USM) Assoc. Prof. Dr. Normastura Abdul Rahman 15/05/11 - 14/05/13 USM Short Term RM 39,925.00	Completed: 21/10/14	A manuscript submitted to <i>Archives of Orofacial Sciences</i>
65.	To compare the effectiveness between turmeric paste and triamcinolone in treating minor oral recurrent aphthous stomatitis	2011 (USM) Dr. Daddy Suradi Halim 15/08/11 - 14/08/13 USM Short Term RM 14,635.00	Completed (official report not submitted)	
66.	Understanding the interaction of FcyRIIIa gene polymorphism with periodontal disease	2011 (USM) Dr. Haslina Taib 15/08/11 - 14/08/13 USM Short Term RM 39,876.00	Completed 14/2/15 (official report not submitted)	

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
67.	Factors associated with oral health related quality of life among pregnant women in Hospital Universiti Sains Malaysia	2011 (USM) Dr. Norkhafizah Saddki 15/08/11 - 14/08/13 USM Short Term RM 17,762.00	Completed	Proceedings of Annual International Conference Syiah Kuala University 2011, 29-30 Mar 2011, Banda Aceh, Indonesia
68.	A study of permanent second and third molars in determining the optimal time for orthodontic intervention among Malay population using radiographs	Dr. Shani Ann Mani 15/08/11 - 14/08/13 USM Short Term RM 9,060.00	Completed (official report not submitted)	
69.	Evaluation of anti-cardiolipin antibodies in periodontitis patients	2011 (USM) Dr. Wan Majdiah Wan Mohamad 15/05/11 - 14/05/13 USM Short Term RM 39,246.00	Completed: 10/1/15	Wan Majdiah Wan Mohamad, Chong Kah Ning, Siti Lailatul Akmar Zainuddin, Haslina Taib (2014). Evaluation of serum anti-cardiolipin antibodies in patients with chronic periodontitis. International Medical Journal, 21(2): 166-169.
70.	Mechanism of Bacteria Adhesion on Nanofilled Tooth Coloured Restorative Materials	2012 (USM) Dr Dasmawati Mohamad, Dr Nurul Asma Abdullah, Dr Zuryati Ab Ghani, AP Habsah Hasan. 01/6/2012 – 31/5/2014. Grant Type: FRGS Fasa 1/2012, RM 102,100.00.	Completed 30/11/14 (official report not submitted)	
70	Antibacterial and anti-Inflammatory effects of ixora coccinea linn on human periodontal ligament fibroblast cell line	2012 (USM) Dr Dasmawati Mohamad, Prof. Ismail Ab. Rahman, AP Dr Hasnah Osman, Ap Habsah Hasan. 15 Oct 2012 - 14 Oct 2015.		

No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
		Grant Type: USM Short-Term, RM40,000.00		
72	A Three Dimensional Computed Tomography (3D CT) Study of Maxillary Sinus in Malays.	2013 (USM) Dr Asilah Yusof, Assoc Prof Rozita Hassan 01 April 2013 - 31 March 2015 Grant Type: USM Short-Term, RM36,599.00		
73	In Vitro Studies on Antimicrobial Properties of Malaysian Honey and Propolis Extract Against Pathogens Implicated in Denture Stomatitis	2013 (USM) Dr Nurhayu Ab Rahman, Dr Suharni Mohamad, Ms Haswati @Nurhayati Abdullah 15 Nov 2013-14 Nov 2015 Grant Type: USM Short Term, RM40,000.00		
74	Dry Mouth Condition and Swallowing Impairment in Patients with Type II Diabetes Mellitus	2013 (USM) Dr Norsila Abdul Wahab, Dr Azlina Ahmad, Dr Haslina Taib 15 Nov 2013 - 14 Nov 2015 Grant Type: USM Short Term, RM40,000.00		
75	DNA Microarray Screening Of Non-Syndromic Cleft Lip And Palate Patients With Dental Anomalies	2013 (USM) Prof Madya Dr Normastura Abd Rahman, Dr Azlina Ahmad, Dr Sarina Sulong 01/12/2013 – 30/11/2016 Grant Type: RUI Grant, RM221,831.40		

No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
76	The Interval Intervention on Oral Health, Dietary Habits and Nutritional Status Among the Elderly Living in Rumah Seri Kenangan	2014 (USM) Dr Ruhaya Hassan and Dr Mohd Zulkarnain Sinor 01/7/2014 - 30 /6/2016. Grant Type: USM Short-Term, RM40,000.00		
77	Comparison Study Between the Effects of Low Level Laser Therapy (LLT), Low Intensity Pulsed Ultrasound (LIPUS) Treatment and the Combination of Them, on Orthodontic Tooth Movement in Rats	2014 (USM) Assoc Prof Dr Adam Husein, Assoc. Prof. Dr Rozita Hassan, Dr Azlina Ahmad, Dr Mohammad Khursheed Alam 01/6/ 2014 – 31/5/2016. Grant Type: USM Short-Term, RM40,000.00		
78	Paraoxanase Activity in Type 2 Diabetes Mellitus Malay Patients in HUSM (Hospital Universiti Sains Malaysia)	2014 (USM) Dr Hanim Afzan Ibrahim, Assoc. Prof Dr K.N.S Sirajudeen, Dr Julia Omar 01/6/ 2014 – 31/5/2016. Grant Type: USM Short-Term, RM40,000.00		
79	Determination of DUSP6 Polymorphism in Class III Malocclusion, Attending at Hospital Universiti Sains Malaysia (HUSM)	2014 (USM) Dr Rehana Basri, Dr Khairani Idah Mokhtar@Makhtar, Dr Saidi Jaafar, Dr Mohammad Khursheed Alam 01/6/ 2014 – 31/5/2016. Grant Type: USM Short-Term, RM40,000.00		

No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
80	Assessment of Oral Health Status and Associated Factors Among Elderly in Pasir Puteh, Kelantan.	2014 (USM) Dr Mohd Zulkarnain Sinor and Dr Norkhafizah Saddki 15/6/2014 – 14/6/2016. Grant Type: USM Short-Term, RM40,000.00		
81	The Prevalence of Miltenberger Blood Group Polymorphism Among Kelantanese Population by PCR-Based Techniques	2014 (USM) Dr Wan Suriana Wan Ab Ahmad, Prof Dr Rosline Hassan, Dr Azlina Ahmad, Ms Ang Cheng Yong 15/3/2014 – 14/3/2016 Grant Type: USM Short-Term, RM40,000.00		
82	The Efficacy of Cetylpyridinium Chloride Mouthwash as an Adjunct to Toothbrushing on Reducing Dental Plaque and Gingivitis in Malaysian Population	2014 (USM) Dr Mon Mon Tin Oo, Dr Norkhafizah Saddki, and Dr Ninin Sukminingrum 15/3/2014 – 14/3/2016 Grant Type: USM Short-Term		
83.	The Effect of Tualang Honey Onhealing After Conventional Periodontal Therapy in Chronic Periodontitis Patients	2014 (USM) Dr Zurairah Berahim, Dr Azlina Ahmad and Dr Haslina Taib Duration : 15/3/2014 – 14/3/2016 Grant Type: USM Short-Term, RM40,000.00		
84.	Rapid Detection of Porphyromonas Gingivalis and Aggregatibacter Actinomycetemcomitans Using Loop Mediated Isothermal Amplification in Periodontitis Patients	2014 (USM) Dr Suharni Mohamad, Dr Azlina Ahmad and Dr Haslina Taib 15/3/2014 – 14/3/2016 Grant Type: USM Short-Term, RM40,000.00		

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	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
85.	Angiogenesis and Osteogenesis Gene Expressions of Endothelial Cell Lines Seeded on Biphasic Calcium Phosphate (BCP) Scaffold with Vascular Endothelial Growth Factor (VEGF)	2014 (USM) Assoc Prof Dr Noor Hayati Abdul Razak, Prof Dr Zainal Arifin Ahmad, Dr Azlina Ahmad and Dr Roselinda Ab Rahman 15/3/2014 – 14/3/2016 Grant Type: USM Short-Term, RM40,000.00		
86.	Effect of Piper Sarmentosum Aqueous Extract on Oral Ulcers Induced in a Rat Model	2014 (USM) Prof. Dr Ismail Ab Rahman, Assoc Prof Dr Adam Husein and Dr Dasmawati Mohamad 1/9/2014 – 31/8/2015 Grant Type: USM Short-Term, RM50,000.00		
87.	Orthodontic Treatment Stability Using Passive Self-Ligating and Conventional System Utilizing 3D Micro CT-An Intervention Study	2014 (USM) Dr Norma Ab Rahman, Dr Mohammad Khursheed Alam, Dr Basaruddin Ahmad, Dr Wey Mang Check and Assoc Prof Siti Adibah Othman 1/11/2014 – 31/10/2016 Grant Type: USM Short-Term, RM47,600.00		
88.	Effect of Piper Sarmentosum Aqueous Extract on Oral Ulcers Induced in a Rat Model	2014 (USM) Dr Nik Aloesnisa Nik Mod Alwi, Dr Norzaliana Zawawi and Dr Azlina Ahmad 1/11/2014 – 31/10/2016 Grant Type: USM Short-Term, RM44,000.00		

No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
89.	Development of Real-Time Loop-Medicated Isothermal Amplification for Rapid Detection of High-Risk Human Papillomavirus Genotypes 16 in HPV-related oral Cancer Patients	2014 (USM) Dr Suharni Mohamad Grant Type : Science Fund.		
90.	Biocompatibility and Sealing Ability of Dual Cure Composite and Flowable Composite as a Repair Material for Furcal Perforation	2014 (USM) Dr Yanti Johari, Dr Mohd Fadhli Khamis 15/12/2014 – 14/12/2016 Grant Type : USM Short-Term, RM41,910.00		
91.	The Effect of Calcium Hydroxide Intracanal Medicament on the Radicular Bond Strength of Self Adhesive Cement for Fiber Post Cementation	2014 (USM) Dr Nik Rozainah Nik Abdul Ghani, Dr Norhayati Luddin, Assoc. Prof. Dr Sa'man Malik Masudi 15/12/2014 – 14/12/2016 Grant Type : USM Short-Term, RM47,572.10		
92.	Surface Effects on Titanium Implants by Different Hygiene Instruments	2014 (USM) Dr Akram Hassan, Assoc. Prof. Dr Erry Mochamed Arief, Dr Haslina Taib 15/12/2014 – 14/12/2016 Grant Type : USM Short-Term, RM44,200.00		
93.	Evaluation of Microleakage of Fiber Reinforced Post System (Everstick) Under Simulated Occlusal Loading	2014 (USM) Dr Nor Aidaniza Abdul Muttlib, Dr Zaihan Ariffin, Assoc Prof Dr Normastura Abd Rahman 15/12/2014 – 14/12/2016		

No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
		Grant Type : USM Short-Term, RM41,537.10		
94.	Influence of Ferrule Height on the Fracture Resistance of Root Canal Treated Tooth Restored with Post, Core and Crown	2014 (USM) Dr Rabihah Alawi, Dr Nor Aidaniza Abd Muttlib, Assoc Prof Dr Normastura Abd Rahman 15/12/2014 – 14/12/2016 Grant Type : USM Short-Term, RM50,000.10		
95.	Comparison of the Efficacy, Surface hardness and Surface Roughness of natural Tooth Specimen After Bleaching Treatment with Over the Counter and Professionally Applied Whitening Agent on human Teeth	2014 (USM) Dr Mohamad Syahrizal Halim, Assoc Prof Dr Normastura Abd Rahman, Dr Zuryati Ab Ghani 15/12/2014 – 14/12/2016 Grant Type : USM Short-Term, RM49,317.10		
96.	Evaluation of the Shear Bond Strength and Enamel Surface Roughness of Resin Modified Glass Ionomer Cement with Different Enamel Surface Preparation	2014 (USM) Dr Mohammad Khursheed Alam, Assoc Prof Dr Rozita Hassan 15/12/2014 – 14/12/2016 Grant Type : USM Short-Term, RM35,000.00		
97.	Interface mechanisms and dentinogenic differentiation potential of a newly developed nanohydroxyapatite-silica-Glass Ionomer Cemet (GIC) composite	2014 (USM) Dr Norhayati Luddin, Prof Dr Ismail Ab Rahman, Assoc Prof Dr TP Kannan, Dr Nik Rozainah Nik Abdul Ghani, Assoc Prof Dr Sa'an Malik Masudi 1/12/2014 – 30/11/2017 Grant Type : FRGS, RM135,000.00		

No.	Research Projects			
	Title of research	Date of commencement/ researchers/ institution/ research grant (if any)	Status of conduct (If completed, please state date of completion)	Presentation/ Publication
98.	An In Vitro Study on Effect of Two Intracanal Medicaments on Cell Viability and Attachment to the Irrigated Dentin	2014 (USM) Dr Aung Thu Htun, Dr Azlina Ahmad 15/12/ 2014 – 14/12/ 2016 Grant Type : USM Short-Term, RM44,225.00		
99.	Wound Healing in Critical Sized Mandibular Bone Defect Using Locally -Produced Biphasic Calcium Phosphate Graft with Vascular Endothelial Growth Factor in a Rabbit Model	2014 (USM) Dr. Roselinda Ab. Rahman, Profesor Dr. Zainal Arifin Ahmad, Prof. Madya Dr. Noor Hayati Abdul Razak, Dr. Azlina Ahmad, Dr. Mohd Fadhli Khamis. 15/9/2014-14/9/2016 Grant Type : USM Short-Term, RM45,000.00		
100.	Determination of Tooth Size and Dental Arch Dimension in Pakhtun Pakistani Population	2014 (USM) Dr. Mohd Fadhli Khamis, Dr. Mohammad Khursheed Alam, Dr. Nur Atika Md Ashar. 15/12/2014-14/12/2016 Grant Type : USM Short-Term, RM42,514.10		
101.	Identification of Dividing Cells, Immature and Mature Neurons in the Dental Stem Cell Niche Area Using Immunohistochemistry Technique in Postnatal Normal Adult Rat Model	2014 (USM) Dr. Nor Farid Mohd Noor, Dr. Khairani Idah Mokhtar@Makhtar, Dr. Nurhafizah Ghani, Nur Mohamad Mohd Makhtar. 15/12/2014-14/12/2016 Grant Type : USM Short-Term, RM45,845.00		

FIXED PROSTHODONTICS PERFORMED BY UNDERGRADUATE STUDENTS IN UNIVERSITY OF MALAYA

Author:

A. ABDUL AZIZ, N. YAHYA, N. BAHARUDDIN, and S. HASAN, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To evaluate the types of crowns and bridges that had been constructed by the final year dental students in University of Malaya.

Materials and methods:

Data was collected from the final year students' project books of the year 2004/05 and 2005/06. The data was divided into 2 main categories; crowns and bridges. There were 360 crowns and 130 bridges delivered by the students. The information was evaluated using the SPSS.

Results:

Almost all types of crowns and bridges were constructed by the dental students. For crowns, they were metal ceramic crown (73.9%), full ceramic crown (15.3%), full metal crown (10.6%) and veneer (0.3%). Whereas for bridges, there were fix-fix bridge (81%), cantilever bridge (9%), resin bonded bridge (6%) and fix-moveable bridge (4%).

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Conclusion:

The most common fixed prosthodontic restorations done by the students were metal ceramic crown and fix-fix bridge.

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STRUCTURAL AND COMPOSITIONAL CHARACTERIZATION OF SILVERFIL AMALGAM

Author:

C. RAMASINDARUM, Conservative Dentistry, University of Malaysia, Kuala Lumpur, Malaysia, **N.H. ABU KASIM**, Dept. of Conservative Dentistry, University of Malaysia, Kuala Lumpur, Malaysia, **V. BALAKRISHNAN**, Department of Physics, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia, and **M.A. YARMO**, School of Chemical Science and Food Technology, University National of Malaysia, Bangi, Malaysia

SilverFil (Silverfil dental Products, Malaysia) is another commercially available dental amalgam; however it is based on silver and mercury only. It is claimed that upon amalgamation, there is no excess mercury in SilverFil.

Objectives:

The objectives of this study were to determine the structural state and chemical composition of the starting materials and presence of mercury in the resulting amalgam.

Methods:

All the starting materials of SilverFil and the SilverFil amalgam specimens were characterized using Field Emission Scanning Electron Microscopy (FESEM-EDX), X-Ray Diffraction (XRD) and X-Ray Photoelectron Spectroscopy (XPS). Results: The FESEM images of the amalgam show silver-mercury (Ag-Hg) clusters. The elemental mapping of SilverFil™ shows good distribution of Ag and Hg. The EDX analysis showed that all the chemical composition of the starting materials contain no and consist of only Ag and Hg.

Result:

These results agreed concurred with the XRD analysis. The XRD analysis also revealed that the chemical composition of SilverFil is similar to naturally occurring mineral called "Moschellandsbergite". The XPS analysis showed that there was no free mercury (Hg⁰) present in the starting material. When the resulting amalgam was analysed, the binding energy of Hg(4f) were 101.8eV and 100.6eV confirming the presence of bonded mercury to oxygen (HgO).

Conclusion:

It can be concluded that there was no free mercury present in SilverFil.

Saturday, March 19, 2011

Location: Hall C (San Diego Convention Center)

Presentation Type: Poster Session

WOUND HEALING POTENTIAL OF AFTA MAD AND CHLORINE DIOXID GEL

Author:

F. AL BAYATY¹, M. ABU HASSAN¹, M. MASUD¹, and M. ABDULLA², ¹Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia, ²Faculty of Medicine, University of Malaya, Selangor, Malaysia

Objective:

This study was conducted to investigate whether topical application of Afta mad and chlorine dioxid gel could improve the impaired wound healing closure in streptozotocin-induced diabetic rats. **Materials Methods:** Four groups of adult male Sprague Dawley rats, 2 cm full-thickness skin wound were experimentally created on the posterior neck area of streptozotocin-induced diabetic rats (STZ). Wounds of Group 1 animals were topically treated twice daily with 0.2 ml of vehicle, sterilized distilled water, as a placebo control group. Group 2 animals served as reference standard and treated topically twice daily with 0.2 ml of Intrasite gel. Animals of Group 3 and 4 (experimental groups) were treated topically twice daily with 0.2 ml of each Afta mad and chlorine dioxid gel, respectively.

Results:

Macroscopically, the reference standard gel and the two gels-treated wounds were significantly healed faster in comparison to placebo control wounds group. Wound closure was significantly accelerated by topical application of Aftamad compared to reference standard gel and chlorine dioxid gel. Furthermore, histological staining of healed wounds, in Afta mad -treated wounds there were significant increases in blood vessels, fibroblast, collagen regeneration, and epithelization compared with the reference standard gel and chlorine dioxid gel.

Conclusion:

Afta mad can improve and enhance the impaired wound healing and increased the rate of cellular proliferation in diabetic rats, as ascertain by accelerate the rate of wound healing closure. This study was supported by University Teknologi MARA, DANA Grant 5/3/DST (11/09).

Friday, March 18, 2011:

Location: Hall C (San Diego Convention Center)

Presentation Type: Poster Session

CANONICAL AND NONCANONICAL WNT LIGAND PROTEIN DISTRIBUTION IN AMELOBLASTOMA SUBTYPES

Author:

C.H. SIAR, Department of Oral Pathology, Oral Medicine & Periodontology, University of Malaya, Kuala Lumpur, Malaysia, K.S. CHUAH, Klinik Pergigian Chuah Seksyen 14, Petaling Jaya, Malaysia, and K.H. NG, formerly Unit of Stomatology, Institute for Medical Research, Kuala Lumpur, Malaysia

Objective:

Wnt gene family encodes 19 ligands and these molecules are involved in diverse biological processes including odontogenesis. The ameloblastoma is a benign, locally-invasive odontogenic epithelial neoplasm of putative enamel organ origin. Dysregulation of this signaling pathway has been implicated in the tumorigenesis of many human neoplasms and cancers but its role during the development and progression of ameloblastoma remains unclear. The aim of this study was to determine the distribution of canonical and noncanonical Wnt ligand proteins in the different ameloblastoma subtypes and to speculate on its significance.

Methods:

Canonical (Wnt-1, -2, and -8a), noncanonical (Wnt-5a, -6, -7a and -7b) and indeterminate (Wnt-2b and -9b) Wnt ligand proteins were examined immunohistochemically in unicystic (UA, n=19), solid/multicystic (SA, n=35), desmoplastic (DA; n=8) and recurrent ameloblastoma (RA, n=10).

Results:

Wnt ligand proteins were detected at varying intensity levels in the cytoplasm and cell membrane of pre-ameloblast-like and stellate reticulum-like cells of the ameloblastoma subtypes evaluated, and their pattern of distribution was heterogeneous. Among the canonical Wnt ligand proteins examined, Wnt-1 showed overexpression in SA (n=35/35; 100%), UA (n=19/19; 100%) and to a lesser extent in DA (n=5/8; 62.5%) and RA (n=7/10; 70.0%) ($p < 0.05$), thus suggesting a positive correlation between the canonical Wnt signaling pathway molecules and ameloblastoma subtypes. In contrast, noncanonical Wnt ligand proteins were mostly underexpressed or absent except for Wnt-5a which was detected primarily in UA (n=8/19; 42.1%) compared to SA (n=1/35; 2.9%), DA (n=0/8; 0%) or RA (n=0/10; 0%) ($p < 0.05$). Both Wnt ligand proteins (Wnt-2b and -9b) in the indeterminate group were not detected in all subtypes.

Conclusion:

Present findings suggest that Wnt signaling pathway is activated during ameloblastoma tumorigenesis and that the canonical Wnt ligand proteins are most probably the key molecules involved in this process.

Wednesday, March 16, 2011: 3:15 p.m. - 4:45 p.m.
Location: Room 29D (San Diego Convention Center)
Presentation Type: Oral Session

CARIES PREVALENCE AMONG 12-YEARS OLD SCHOOL CHILDREN IN MALAYSIA

Author:

M. MASOOD, Universiti Teknologi MARA, Shah Alam, Malaysia, **N. YUSOF**, Universiti Teknologi MARA, Selangor, Malaysia, **M.I. ABU HASSAN**, Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia, and **N. JAAFAR**, Dept. of Community Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

The aim of this descriptive, cross sectional study was to determine the prevalence and severity of caries among 12-years old school children in two artificially fluoridated districts, Shah Alam and Seberang Prai, Malaysia.

Methods:

Data was gathered from record cards of School Dental Incremental Care programme. In this programme, dental therapists visit primary schools annually and perform Oral hygiene instructions and also provide curative care to the children free of charge. A multi-stage cluster random sampling was used to select school and students dental record cards. Record cards included the demographic data (age, gender, and ethnicity), oral health conditions (caries experience, gingivitis) and treatment need. Caries experience of each child was recorded by trained dental therapists using World Health Organization diagnostic criteria.

Results:

The final sample size consists of 1830 record cards (53% boys, 47% girls; 44.2% Malays, 31.1% Chinese and 21.5% Indians). The overall caries prevalence was 29.5% with mean DMFT (0.58, 95%CI=0.53-0.63). Filling component (n=453, 25.1%) contributed most in DMFT, followed by active caries (n=175, 9.6%) and missing teeth component (n=23, 1.3%). The prevalence of children with high caries (DMFT > 4) experience was 48(7.6%). Although, females caries prevalence (n=278, 31.6%) and mean DMFT (0.61, 95%CI=0.53-0.69) was slightly higher than males but results were not statistically significant (P=0.195). Among ethnic groups, Chinese show highest caries prevalence (n=175, 30.7%) and DMFT (0.62, 95%CI=0.52-0.72) but results were not statistically significant (P=0.580).

Conclusion:

The overall dental caries prevalence and severity was low in the 12-year-old school Malaysian children in who live in fluoridated area. The proportions of treated dental caries were higher as compared to active decay with low rate of extractions, which may be an impact of the School Dental Incremental Care programme.

Friday, March 18, 2011: 2 p.m. - 3:15 p.m.

Location: Hall C (San Diego Convention Center)

Presentation Type: Poster Session

CARIES PREVALENCE AMONG 12-YEARS OLD SCHOOL CHILDREN IN MALAYSIA
The “Junior Doctors” Health Promotion Program – a Process Evaluation

Author:

N. JAAFAR, University of Malaya, Kuala Lumpur, Malaysia, **K. OMAR**, Health Education Unit, Ministry of Health Malaysia, Kelantan, Malaysia, **J. AHMAD**, Ministry of Health Malaysia, Health Education Unit Pahang, Pahang, Malaysia, **W.S. WAN HUSSEIN**, University of Malaya, Faculty of Economics and Administration, Kuala Lumpur, Malaysia, and **Z. MANAF**, University of Malaya, Faculty of Education, Kuala Lumpur, Malaysia

Compared to outcome evaluation, very few studies focused on evaluating the process leading to long-term sustainability problems. This is a “child-to-child” health promotion model for primary schoolchildren called the “Junior Doctors” (JD) where they are empowered to give health education and conduct activities. After ten years running, what made it self-sustainable?

Objective:

To evaluate key factors responsible for the sustainability of these programs. Method: Self-administered questionnaires were sent to 2804 JD's.

Results:

Over 90% agreed that it increased their knowledge, contributed to self-development, enjoyable, appropriate, effective, efficient and acceptable. Between 50-89% said the program changed their attitude, they practiced healthier lifestyle, can teach others, better perceived by peers, influenced their career choice and the content was adequate. However less than one-half (42%) still had lack confidence in public speaking. Qualitative evaluation from several focused group discussions (FGD) with 54 JD's corroborated the findings while adding to better understanding of underlying reasons. FGD on 41 parents, 15 teachers and 14 administrators suggest that the program was self-sustainable because the process of peer education freed teachers of much didactic teaching, promoted self-esteem among JD's, improved communication and public speaking skills and enhanced the school image. The school's health environment improved from the JD's surveillance report. These benefits are over and above the increase in health knowledge which was the main objective of the Health Education Unit. Thus the beneficial impact was felt by all stakeholders.

Conclusion:

The main reason for sustainability was that the process satisfied the needs of all stakeholders who see the results worthwhile. It is the development of the personal character of the JD's while teaching and helping other children which were most appreciated by all. (Grant Vote F717/2003B University Malaya).

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

CEPHALOMETRIC NORMS FOR THE MALAYSIAN CHINESE

Author:

N.M. ZAMZAM, University of Malaya, Kuala Lumpur, Malaysia, and **K. PURMAL**, University of Malaya, Kuala Lumpur, Malaysia

Chinese ethnic group make up more than a quarter of Malaysia's population and also the second largest ethnic group in Malaysia. The aim of this study was to describe the lateral cephalometric norms for adult Malaysian Chinese females and Chinese males with normal occlusion and to document the differences between them.

Objective:

To establish a set of data in order to facilitate diagnosis and treatment planning of Malaysian Chinese orthodontic/orthognathic patients.

Methods:

The sample consisted of 98 Chinese (55 females and 43 males) with a mean age of 22.1 years for female and 22.3 years for male. Cephalometric tracings were done and the landmarks were digitized using OPAL 3.2 Image computer software. Twenty-five subjects who were not involved in this study were randomly selected for error study. The differences were tested using one-way ANOVA. The level of significance was set at 0.1% level ($p < 0.01$).

Results:

There was a significant difference between both groups in the mean of SN/MxP, MxP/MnP, %LAFH/TAFH, PFH, Wits analysis, UI/MxP, LI/MnP, I1angle, ExpUI, LS-E, LI-E, NLA, NT, CT and LADH values.

Conclusions:

This study showed that although the two study groups were from the same ethnicity, there were differences between them. The males showed higher skeletal values vertically. Upper incisors were more proclined in females and lower incisors in males. Males showed more incisors at rest, more prominent nose and chin. The data obtained were then pooled to produce commonly used cephalometric values of Malaysian Chinese. Financial support: Vote F (No; F0107/2002A) granted by the University of Malaya, Kuala Lumpur

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

DENTAL ARCH RELATIONSHIP OF UNILATERAL CLEFT LIP AND PALATE

Author:

N. MOHAMED ZAMZAM, University of Malaya, Kuala Lumpur, Malaysia, and **Z. RADZI**, University of Malaya, Kuala Lumpur, Malaysia

Poorly performed primary surgery for cleft lip and palate patient is likely to compromise facial growth and dental development.

Objectives:

This study was done to identify all patients with complete unilateral cleft lip and palate (UCLP) who had undergone primary cleft repair and record their dental arch relationship.

Methods:

The patients were drawn from detail search from a cleft unit in the East region, West Malaysia. The criteria for selection were: 1. Patients born between January 1, 1980, and December 31, 1993. Primary repair of the UCLP had been performed within the East region. 2. All patients were Malays with no history of mental subnormality or other craniofacial anomalies. 3. No active orthodontic treatment other than that required before secondary alveolar bone grafting. The dental arch relationships were assessed using the Goslon Yardstick which ranks the study models of patients with cleft lip and palate into five categories: excellent, good, fair, poor and very poor. There were two examiners ranking the models.

Results:

The results showed that 41 samples obtained consisted of 24 males and 17 females. Mean age was 16.7 years. Most of the clefts were on the left side (71%). Only 41.5% (17) of patients were in the more favourable Goslon groups 1 and 2, whereas groups 4 and 5 represented 24.4% (10) of the total sample. A third of the cleft patients (34.1%) were found to be representative of Goslon group 3 (only fair outcome). These patients will require complex orthodontic and orthognathic treatment to correct their Class III malocclusion.

Conclusions:

Current surgical protocols, performed in this region should be evaluated and revised. This will enable significant improvement in treatment outcome to be achieved for future patients. Financial support: Vote F (F0385/2004A) granted by the University of Malaya, Kuala Lumpur.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

SORPTION IN SOFT LINERS CAUSED BY DENTURE CLEANSERS AND DISINFECTANT

Author:

O.T. ALIRHAYIM, University of Malaya, Kuala Lumpur, Malaysia, and **W.A.A. MAHMOOD**, University of Malaya, Kuala Lumpur, Malaysia

Objective:

A study was carried out to assess weight changes in three auto polymerized silicone soft denture liners; GC(Soft and extra soft, GC,Japan) and Mollosil plus (Detax, Germany) after immersion in different denture cleansers; Polident (Kobayashi Block Co., Ltd. Osaka, Japan), Steradent (Reckitt & Colman., UK), Protefix (Queisser Pharma, Germany) and one disinfectant; Perform (Schulke & Mayr. Asia Ltd.).

Methods:

The Soft lining materials were mounted on the prepared disc form (14 mm x 2 mm) acrylic resin base (meliudent, Heraeus Kulzer,Germany), n = 75. Five specimens from the three soft liners were immersed in each denture cleanser and one disinfectant for 8 hours; this represented the normal overnight cleansing regime. Fresh solutions of denture cleanser and disinfectant were prepared each day and following the immersion period, the specimens were stored in tap water at 37°C for the remainder of 24-hour period (24 -8 = 16hrs). This procedure was repeated for 60 days with the interval of 3,7,14, 28 and 60 days. The Control specimens were stored in tap water at 37°C. Sorption was expressed as a percent of weight loss or gain compared with the weight of the initial sample by using digital electronic balance (sartorius, Germany).

Results:

The GLM Repeated Measures procedure was conducted to test the null hypotheses about the effects of both the subjects factors and the within factors. The results of the analysis indicated that there is a significant effect ($P < 0.05$) in terms of weight gain for immersion period and there is a significant interaction effect for immersion period-by-material and immersion period-by-denture cleanser.

Conclusion:

Significant weight gain with longer immersion period but the amount of weight gain is dependent on type of material and denture cleanser.

This study was supported by IPPP-P0210/2007A; University of Malaya, Kuala Lumpur, Malaysia

The Preliminary Program for The 48th Annual Meeting of the ANZ IADR (October 1-3, 2008)

IDENTIFICATION OF TWO PERIODONTOPATHOGENS IN ADULTS WITH ADVANCED CHRONIC PERIODONTITIS

Author:

R.D. VAITHILINGAM¹, T.B. TAIYEB ALI¹, R. YUSUF², and H. HASSAN¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²University of Malaya, Faculty of Medicine, Kuala Lumpur, Malaysia

Objectives:

To identify presence of *Actinobacillus actinomycetemcomitans* (*Aa*) and *Prevotella intermedia* (*Pi*) in subgingival plaque of 3 ethnic groups of selected adult Malaysians with Advanced Chronic Periodontitis using Polymerase chain reaction (PCR) , and to correlate these findings with their clinical periodontal status.

Methods:

60 adults, comprising 20 subjects from each ethnic group, participated in this study. In each ethnic group, 10 diseased subjects were age, sex and ethnically matched with 10 healthy individuals. Clinical parameters were assessed for all. Subgingival plaque samples were collected from each subject for identification of *Aa* and *Pi* using PCR method.

Results:

Prevalence for *Pi* (83.3%) was high and for *Aa* (6.7%) was low in the total subject population. *Pi* and *Aa* were more prevalent in diseased (86.7% and 10% respectively) than in healthy (80% and 3.33% respectively) subjects. Among the different ethnic groups, *Aa* was detected in 15% of Indian subjects, 5% of Malay subjects but none of the Chinese subjects whereas *Pi* was detected in 90% of Malay subjects, 85% of Indian subjects and 75% of Chinese subjects. However no significant association between the presence of *Aa* and *Pi* with race and disease status was found. Only 5.56% of the infected subjects were colonized by both *Aa* and *Pi*. There was no significant association between the presence of *Pi* and the clinical periodontal parameters. *Aa* had a moderately significant causal effect on mean CAL ($p < 0.05$, Observed power = 0.68) when tested by GLM.

Conclusion:

In this study, detection of *Pi* was very high but the detection of *Aa* was low in the diseased as well as healthy subjects. No significant association between the presence of *Aa* and *Pi* with ethnicity was detected. *Aa* had a moderately significant causal effect on CAL. Study supported by Vote F 0130 /2003C, University of Malaya.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

RADIOGRAPHIC EVALUATION OF IMMEDIATE VERSUS DELAYED PLACEMENT OF DENTAL IMPLANTS

Author:

I.M. TAHER¹, **L.T. YOUNIS**², and **F. HANAPIAH**², ¹University of Malaya, Faculty of Dentistry, Kuala Lumpur, Malaysia, ²University of Malaya, Kuala Lumpur, Malaysia

The region of the anterior teeth is frequently affected by a significant degree of atrophy immediately postextraction.

Objective:

to compare the bone healing and crestal bone changes following the immediate (Im) versus delayed (De) placement of titanium dental implants in extraction sockets.

Methods:

Forty-nine patients (28 women, 21 men), who needed implant treatment at the incisor, canine, or premolar regions of the maxilla or mandible. Twenty three subjects received 37 Im implants and 26 subjects received 37 De implants. The implants were placed immediately in the fresh sockets following the extraction in the Im group & approximately 6 months after extraction in the De group. The width and depth of the marginal bone defects mesially & distally to the implants were evaluated radiographically by using a computer program designed for measuring distances in the digitized radiographs.

Results:

In the Im group, the mean reduction over time amounted to 48% (from 3.4 to 1.3 mm) was statistically significant ($P < 0.05$) when tested by sample t-test. In the De group, the mean reduction over time amounted to 17% (from 2.1 to 1.9 mm).

Conclusions:

New bone formation occurs in defects associated with immediately placed implants in extraction sockets better than De implant; the main advantage of the Im implantaion is the saving of clinical time and preservation of bone volume. (Supported by Vot F0505/2005A, University of Malaya).

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

RELATIONSHIP BETWEEN GINGIVAL RECESSION AND DENTINE HYPERSENSITIVITY

Author:

T. TAIYEB-ALI, and Z. MAHMUD, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To investigate the relationship between gingival recession and dentin hypersensitivity.

Methods:

This was a parallel-design, operator-blind longitudinal study. Subjects were patients with complains of hypersensitivity during intake of cold, sweet or acidic foods referred from the Outpatient Department of the Dental Faculty, University of Malaya. They met a set of inclusion and exclusion criteria. Sixty subjects with at least 2 and not more than 4 hypersensitive teeth were selected. They were divided into 2 groups, those with and without recession, which were randomly assigned to use Sensodyne® or Oral-B® desensitizing toothpastes and were provided with similar soft toothbrushes. After the Plaque Score was assessed on the test tooth, plaque was removed using water and cotton pellet and subsequently wiped with a dry cotton pellet prior to hypersensitivity assessment. The sensitive teeth were stimulated by thermal (cold air and ice stick) and osmotic stimuli and the responses of hypersensitivity were recorded on the Visual Analogue Scale at baseline, week-2 and week-6. Motivation and reinforcement of modified oral hygiene was instituted during every visit. Comparison of the clinical data was done using SPSS 11.5 Statistical Package utilizing paired t-test and independent t-test with significant level at $p < 0.05$.

Results:

At baseline the gingival recession group responded significantly to ice-stick and osmotic stimuli in comparison to the non-recession group. The hypersensitivity response to osmotic stimulus only was still significantly greater in the gingival recession group at 2-weeks and 6-weeks intervals ($p = 0.02$, $p = 0.01$ respectively). There were no significant differences in dentin hypersensitivity responses to cold air and ice-stick stimuli after use of desensitizing toothpaste between groups.

Conclusion:

Dentine hypersensitivity can arise in teeth without recession, although this is greater in teeth with recession and the use of desensitizing dentifrices can effectively reduce hypersensitivity in both groups. (Vote F0149/2005A, University Malaya).

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

A STUDY ON THE DESENSITIZING EFFICACY OF TWO DENTIFRICES

Author:

Z. MAHMUD, and **T. TAIYEB-ALI**, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To evaluate efficacy of two popular brands of desensitizing dentifrices, A and B (Sensodyne® and Oral-B® respectively) in reducing dentin hypersensitivity.

Methods:

The subjects selected for the study were walk-in patients with complains of hypersensitivity during intake of cold, sweet or acidic foods from the Outpatient Department in the Dental Faculty, University of Malaya. The subjects met a set of inclusion and exclusion criteria. Sixty subjects with at least 2 and not more than 4 hypersensitive teeth were selected. They were divided into 2 groups by block randomization using a SPSS-11.5 Statistical package. Thirty subjects were assigned to utilize toothpaste A and another 30 subjects were assigned to use toothpaste B. Both groups were provided with similar soft toothbrushes. After the Plaque Score was assessed on the test tooth, plaque was removed using water and cotton pellet and subsequently wiped with a dry cotton pellet prior to sensitivity assessments. The sensitive teeth were stimulated by thermal (cold air and ice stick) and osmotic stimuli and the responses of hypersensitivity were recorded on the Visual Analogue Scale at baseline, week-2 and week-6. Motivation and reinforcement of the modified oral hygiene was given during every visit. Comparison of the clinical data was done using SPSS Statistical Package utilizing paired t-test and independent t-test with significant levels at $p < 0.05$.

Results:

In the present study, both toothpastes were found to reduce dentin hypersensitivity significantly as early as 2 weeks after the commencement of the trial ($p < 0.001$) and the benefits manifested up to the 6-weeks interval. However, A significantly reduced hypersensitivity to ice sticks at week-6 in comparison to B ($p < 0.05$).

Conclusion:

The two tested toothpastes were efficacious in reducing hypersensitivity at all times intervals except A reduced sensitivity significantly in comparison to B to ice-sticks at week-6. (Vote F0149/2005A, University Malaya).

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

CLEANING ABILITY OF DISINFECTANTS FOR DENTAL STEEL BURS

Author:

N.H. ABU-KASIM, University of Malaya, Kuala Lumpur, Malaysia, and **A. MOHAMID-YASIN**, University of Malaya, Malaysia

Dental burs are a source of bacterial contamination due to its direct contact with carious teeth, saliva and blood.

Objective:

The aim of this study was to evaluate the disinfecting and cleaning ability of selected commercially available disinfectants on dental burs.

Method:

Size 5 round stainless steel burs were used to excavate caries from freshly extracted human molars. The burs were then immediately immersed in Grotanat Drill Bath (Shülke & Mayr, Germany), Micro 10 (Unident, Switzerland), Gigasept FF (Shülke & Mayr, Germany), Lysetol AF (Shülke & Mayr, Germany) and 70% Isopropyl alcohol (J.Y. Baker, USA) according to the manufacturer's instructions. Each test groups consisted of 10 burs. Positive and negative control groups (n=10) were also included in this study. The disinfecting ability of the disinfectants was evaluated using bacterial culture where presence and absence of bacterial colonies were noted. The cleaning ability was then assessed using scanning electron microscopy.

Results:

The results showed that the disinfecting ability of Grotanat Drill Bath was statistically significant when compared to all disinfectants evaluated, $p < 0.05$. There was also a significant difference between the positive and negative groups. Examination of scanning electron micrographs showed that Grotanat Drill Bath exhibited the best cleaning ability compared to the other disinfectants evaluated. A positive correlation between bacterial growth and cleaning ability of disinfectants was also evident.

Conclusion:

It can be concluded that Grotanat Drill Bath is an effective disinfectant for the disinfection and cleaning of round stainless steel burs.

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

PIPER BETLE EXTRACT AND S.MUTANS - AN IN VITRO STUDY

Author:

N. THURAIRAJAH, University of Malaya, Kuala Lumpur, Malaysia, and **Z.H.A. RAHIM**, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The aim of this study was to evaluate the *in vitro* antimicrobial activity of the crude aqueous extract of *Piper betle* by determining its effect on the growth, acid production, adherence and cell surface hydrophobicity of *Streptococcus mutans*.

Methods:

The crude aqueous extract *Piper betle* was prepared by decoction. Antimicrobial activity was determined by broth dilution method where the minimal inhibition concentration (MIC) was determined. To assess its effect on growth, acid production and cell adherence, the study was carried out according to the method described by Ooshima et al. (Archs Oral Biol. Vol. 45, 639-645, 2000). Cell surface hydrophobicity of *S. mutans* was measured as described by Saito et al. (Archs Oral Biol. Vol. 42, No. 8, 539-545, 1997).

Results:

The MIC value for the extract was found to be 10mg/ml. The crude aqueous *Piper betle* extract was found to reduce the growth rate of *S. mutans*, which corresponds to the reduction in its acid production. At 10 mg/ml concentration of the aqueous extract, it was found that the cell adherence property was almost completely inhibited ($95.02 \pm 0.58\%$) ($p < 0.05$) and the cell surface hydrophobicity was found to be reduced by $27.38 \pm 3.16\%$ ($p < 0.05$). Data analysis was carried out using ANOVA.

Conclusion:

It can be concluded that the crude aqueous extract of *Piper betle* may have antiplaque property by reducing the cellular growth, acid production, cell adherence and cell surface hydrophobicity of *S. mutans*. This study was supported by IRPA (Project No. 09-0203-0197 EA197) and Vote F (Grant No. F0207/2003A) research grant from the Ministry of Science, Technology and Environment of Malaysia.

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

HABITUAL AND NUTRITIONAL FACTORS FOR ORAL CANCER AMONG MALAYSIANS

Author:

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Objective:

To determine the relationship between smoking, alcohol consumption, quid chewing, dietary intake and development of oral cancer.

Method:

A case-control study was conducted among 145 respondents (86 oral cancer cases, 59 controls). Data on cancer patients were extracted from the Malaysian Oral Cancer Database and Tissue Resource Bank. Controls, matched for sex and age group were visiting patients in selected hospitals. Oral examination was conducted among controls to ensure non-existence of oral lesions. Data on sociodemographic background, practice of risk habits and dietary intake were collected. However, only 40 out of 86 cancer patients responded to our dietary questionnaire. Analysis was done using χ^2 test and Spearman correlation. Respondents were 55 (37.9%) males and 90 (62.1%) females with mean age of 58.3±12.4 years old. Majority of respondents with cancer are Indians (51.8%) followed by the Indigenous people of Sabah and Sarawak (20.0%). Odds ratio (OR) were calculated to determine the relationship of each factor and oral cancer occurrence.

Results:

Quid chewing habit was seen in 57.0% cases and 1.7% controls (OR 76.8, CI 10.2-580.4), alcohol consumption in 25.6% cases and 6.8% controls (OR 4.7, CI 1.5-14.6) and smoking in 36.1% cases and 13.0% controls (OR 3.6, CI 1.5-8.5). Among cases, 70% often take vegetables as compared to 83% among controls (OR 0.5, CI 0.2-1.3) and 45% often consume fruits among cases compared to 50.9% among controls (OR 0.8, CI 0.3-1.8). Only 7.5% cases often take fermented/salted food compared to 24.5% among controls (OR 0.3, CI 0.1-0.9), 35% cases and 71.7% controls often take non-home cooked food (OR 0.2, CI 0.1-0.5) and 5% cases often take frozen food compared to 26.4% among controls (OR 0.1, CI 0.03-0.7).

Conclusion:

The risk of developing oral cancer is highest among quid chewers, followed by alcohol drinkers and smokers. [IRPA grant 06-02-03-0174PR0054/05-05, MOSTI, Malaysia]

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

P53 AND PRB EXPRESSION IN ORAL CANCER AND PRECANCER LESIONS

Author:

A.R. AHMAD, University of Malaysia, Kuala Lumpur, Malaysia, and **R. ZAIN**, University of Malaysia, Kuala Lumpur, Malaysia

The tumour suppressor genes, namely p53 and pRb are frequently mutated in many human cancers and are related to altered expression of their protein products namely p53 and pRb.

Objectives:

To study the expression of p53 and pRb proteins in oral squamous cell carcinoma (OSCC), epithelial dysplasia and epithelial hyperplasia tissues. To correlate p53 and pRb expression with risk habits of betel quid chewing and alcohol consumption.

Methods:

Twenty cases of OSCC, 20 cases of epithelial dysplasias and 20 cases of epithelial hyperplasia were selected from paraffin-embedded archival tissues of the Oral Pathology department, Faculty of Dentistry, University of Malaya. Five normal tissues were included as comparison. All tissues were cut into 5µm sections and subjected to immunohistochemical peroxidase method using monoclonal p53 (DO7) and pRb antibodies respectively. All stained sections were analyzed by light microscopy and a semiquantitative scoring system was used to evaluate the expression of the respective proteins.

Results:

Twelve cases out of 20 SCC cases and 9 cases from 20 cases of epithelial dysplasia showed p53 overexpression. Only 1 case of epithelial hyperplasia showed p53 overexpression. All normal tissue showed no p53 expression. In pRb expression, only 7 out of 20 cases of SCC and 5 cases out of 20 cases of epithelial dysplasia showed abnormal pRb expression. Only 1 epithelial hyperplasia and 1 normal tissue show abnormal pRb expression. Strong correlation of p53 and pRb expression with risk habit of betel quid chewing or alcohol consumption was not observed.

Conclusion:

The findings of this study was comparable with other studies which showed progression of p53 and pRb altered expression from precancer to cancer lesions. This study was supported by University of Malaya's grant (Vot F: F0124/2004B)

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

RISK HABITS, DIETARY INTAKE AND ORAL MUCOSAL LESIONS AMONG MALAYS

Author:

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Objective:

To determine association between practice of risk habits and dietary intake with prevalence of oral mucosal lesions among ethnic Malays in Kelantan.

Materials & Methods:

A cross-sectional study was conducted involving 275 Kelantanese Malays. Respondents were interviewed using a pre-designed questionnaire. Data on socio-demographic background, smoking, alcohol, quid chewing habits and 24-hour dietary intake were collected. Mouth examinations were conducted to identify oral mucosal lesions. All of the respondents were ethnic Malays and were Muslims. Analysis was done using the χ^2 test and Fischer Exact test where applicable.

Results:

Respondents were between 36 to 88 years of age with a mean of 61.2 ± 10.0 years old. 64 (23.3%) respondents were males and 211 (76.7%) were females. Of the 275 respondents, 57 (20.7%) had oral mucosal lesions (4 with potentially malignant lesions [PML], 31 with chewer's mucosa, 22 with other non-PML), while 218 (79.3%) respondents were free of the lesion. Of those who both smokes and chew quid, a majority (64.9%) had lesions compared to those with no risk habits (24.8%) and this difference is statistically significant ($p < 0.001$). Significant difference ($p = 0.001$) was also observed for those who chew quid only where it was found that a higher percentage of those with lesion chewed quid (51.9% vs 20.9%). It was found that there was a significantly higher prevalence of oral lesions in smokers of >45 years duration compared to those with less years duration ($p = 0.005$). Significant difference ($p = 0.022$) was observed in fruit consumption where only 1.8% of those who had lesions consumed fruits, compared to 98.2% who do not.

Conclusion:

Further studies on a larger sample are needed to establish the association between practice of risk habits and diet intake with each of the different types of lesions. (Grant: Monbusho, Japan, 1996-1999 & IRPA Oral Cancer & Precancer, Malaysia, 2003).

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

SUBJECTIVE IMAGE QUALITY OF INTRA ORAL DIGITAL RADIOGRAPHY SYSTEMS

Author:

N. IBRAHIM, University of Malaya, Kuala Lumpur, Malaysia, **K. HORNER**, The University of Manchester, and **H. WORTHINGTON**, The University of Manchester, United Kingdom

Objectives:

This study was designed to examine the subjective aspect of image quality of intra oral digital radiographic systems.

Methods:

Visualix (CCD), VistaScan (PSP), Digora (PSP) and one conventional film were evaluated. A test object was made to examine subjective aspect of image quality. Two X-ray generators were operated at 60kV and 6mA and exposure times ranged from 0.01 to 2 seconds. Five observers were recruited to evaluate the images. Images from film were digitized and all images were displayed on a 17" monitor. Observer agreement in quality assessment was analysed using weighted kappa (Fleiss and Cohen) scores.

Results:

The result showed general substantial agreement between observers for all systems (&Kappa = 0.61 to 0.80) and moderate to almost perfect agreement (&Kappa =0.81 to1.0) were recorded for the intra observer assessments of image quality. VistaScan and Digora (PSP systems) offered a very wide latitude of exposure to produce diagnostically quality images. However the optimum image quality scores were recorded for Visualix (CCD system) over narrower latitude.

Conclusions:

There were marked differences in the imaging characteristics of the systems. Choice of digital system should be made after consideration of the image quality and the latitude.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

PATTERN AND TREATMENT OF EARLY CHILDHOOD CARIES AMONG URBAN CHILDREN

Author:

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Objectives:

The aims of the study were to assess the pattern of early childhood caries (ECC) and to determine the treatment indicated for patients attending University of Malaya Dental clinic.

Methods:

In this retrospective study, data were obtained from patients' record. All patients aged 5 years and below, who had registered and/or treated in year 2000 to 2005, were included. Demographic information, caries experiences and treatment indicated were recorded into patients' data sheet and analysed using SPSS program.

Results:

Out of 210 patients, only 153 records could be retrieved. Of that, six children were caries free and were excluded from the study. The diagnosis of ECC is based on the presence of one or more decay, missing or filled tooth surface of the primary teeth. 53.7, 26.5 and 19.7 percent of the sample aged 5, 4 and 3 years old, respectively. Sixty five percents of the sample was Malays. The total mean of dft was 6.49 (sd 3.64). The 4 year old age group had the highest dft score (7.49; sd 4.19). The dft score was highest among Malays (6.91; sd 3.69). Boys had higher dft score (7.04; sd 3.90) than girls (dft = 5.89; sd 3.26). Posterior teeth were affected more than the anterior teeth. The first molars in both arches were affected more than the second molars. The maxillary anterior teeth were more affected compared to mandible anterior teeth. Most of the patients were indicated for restorative treatment. Almost none of these patients were indicated for topical fluoride.

Conclusions:

This study shows that the mean dft is high in this sample. The posterior teeth are mostly affected by caries as compared to the anterior teeth. Topical fluoride is not commonly indicated by the dentists. Thus, it is recommended that dentists should consider preventive intervention in treating ECC.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

COMMUNITY INDICATOR FOR CARIES EXPERIENCE AMONG SCHOOLCHILDREN IN KUALA LUMPUR

Author:

R. SAUB, University of Malaya, Kuala Lumpur, Malaysia, and **A. MOHAMED**, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

The aim of this study was to determine the “community indicator” for dental caries among secondary school children in Federal Territory Kuala Lumpur (FTKL).

Methods:

An ecological study using aggregated data from Oral Health Information System (HMIS) for caries data and school database for school factors was conducted. School factors included were types of school, school performances at PMR in Mathematics, Bahasa Melayu, Science and English, school socioeconomic circumstances and school material deprivation. All secondary schools (day school) in FTKL were included in this study.

Results:

Bivariate Analysis identified that school mean DMFT was significantly associated with school performance in English ($p= 0.02$) and school socioeconomic code ($p= 0.005$). School performance in English was able to explain about 10 percent of the variation in school mean DMFT and School socioeconomic code was able to explain about 14 percent of the variation in school mean DMFT. The final model that includes school performance in English and school socioeconomic code was able to explain 17 percent of the variations in school mean DMFT.

Conclusions:

School performance in English at PMR and school socioeconomic code could be used as a community indicator to identify secondary school with high caries level in FTKL.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

FRACTURE RESISTANCE OF ROOT TREATED PREMOLARS RESTORED WITH ALL-CERAMIC RESTORATIONS

Author:

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Emphasis has been placed on using adhesive techniques to increase the fracture resistance of root treated teeth.

Objective:

To evaluate the effect of various designs of resin bonded all-ceramic restorations on the fracture resistance of a previously restored, root treated maxillary premolar.

Methods:

Seventy sound maxillary premolars were divided into seven, equal test groups. The six cavity designs investigated included MOD inlay (I), inlay with palatal cusp coverage (IPC), MOD onlay (O), inlay with pulp chamber extension (IPE), inlay with palatal cusp coverage and pulp chamber extension (IPCPE) and onlay with pulp chamber extension (OPE). A group of sound teeth acted as a control group. The all-ceramic restorations were constructed using the CEREC 2 system and cemented using Calibra[®] resin luting cement. The restored tooth units were mounted and loaded axially to fracture using an Instron Universal Testing Machine. The results were analysed using ANOVA ($p < 0.05$) and Tukey Test.

Results:

The I, IPC and O demonstrated fracture strengths of $938N \pm 113N$, $1073N \pm 176N$ and $1317N \pm 219N$ respectively. The restorations incorporating a pulp chamber extension i.e. the IPE, IPCPE and OPE resulted in fracture resistance values of $893N \pm 129N$, $1062N \pm 153N$ and $1347N \pm 191N$ respectively. The values for I and IPE, in contrast to those for IPC and IPCPE, were significantly lower from that for the control group ($P < 0.05$). The O and OPE restorations resulted in fracture resistances not significantly different from the sound tooth ($P > 0.05$).

Conclusions:

The inlay with palatal cusp coverage and the onlay appeared to have the ability to effectively splint the buccal and palatal cusps. The cavity preparations with pulp chamber extension did not appear to offer advantages in terms of restoration of fracture strength. This study was supported by VotF 0351/2002(D) from the University of Malaya

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

OSTEOBLASTS RESPOND TO MILD-HEAT STRESS BY CHANGE IN OPG/RANKL RATIO

Author:

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Objectives:

Molecular chaperones, also known as heat shock proteins (Hsps) and cell stress proteins, have a potent effect on bone remodeling(1;2). Hsps have evolved as intracellular protein-folding molecules essential in enabling cells to cope with environmental and physiological stress(3). Mild physiological stress such as change in pH or oxygen tension also has a potent effect on bone remodeling(4;5). We have investigated the effect of mild thermal stress on osteoblasts with reference to bone remodeling.

Methods:

Osteoblastic cell line; MG63 cells were exposed to 33°C, 37°C and 42°C for 90 minutes, then incubated overnight at 37°C. We assayed for OPG and sRANKL and tumour necrosis factor alpha (TNF α) protein and mRNA and heat shock proteins 27, 60, 70 and 90.

Results:

There was no expression of hsp60 and 70, HSP27 was slightly more up regulated at 33°C compared to 42°C, hsp90 was expressed at all temperatures studied. There was no in TNF α change levels. The expression of RANKL was significantly reduced at 42°C whereas there was no difference in the OPG levels. At 33°C OPG levels were significantly raised, and the RANKL levels were not affected.

Conclusions:

These results show osteoblasts respond differently to hyper-hypothermia, mild thermal stress suppresses RANKL synthesis at 42°C, with no effect on OPG in contrast at 33°C, OPG synthesis is suppressed with no effect on RANKL synthesis. In both cases altering the OPG/RANKL ratio, the balance between RANKL and OPG is critical for modulation of bone remodeling and in both cases would lead to inhibition of bone resorption (1)Nair et al. *Calcif Tissue Int* 1999 Mar;64(3):214-8. (2)Meghji et al. *Bone* 2003 33(3):419-25. (3)Gething M-J. *Guidebook to molecular chaperones and proteins folding catalysts*. Oxford University Press; 1997. (4)Arnett TR, et al. *J Cell Physiol* 2003 ;196(1):2-8. (5)Meghji et al.. *Am J Physiol Endocrinol Metab* 2001;280(1):E112-E119.

The Preliminary Program for IADR Pan European Federation 2006 (September 13-16, 2006)

BOND STRENGTHS OF RELINE MATERIALS TO TWO DIFFERENT DENTURE POLYMERS

Author:

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Objectives:

The aim of the study was to evaluate the shear bond strength (SBS) of reline materials to a light-polymerized urethane dimethacrylate (UDMA) and a heat-polymerized polymethylmethacrylate (PMMA) denture base polymers.

Methods:

Discs of UDMA (Eclipse) and PMMA (Meliodent) denture base polymers of 15mm diameter were bonded to two intra-oral (Secure & Kooliner) and one laboratory-processed (Meliodent RR) reline materials. Eclipse resin was finger adapted to the stone mould and polymerized for 10 minutes using visible light of 400-500nm wavelength. Meliodent specimens were polymerized for 7 hours at 70°C and 1 hour at 100°C. Relining was performed after 30 days water immersion. A brass ring (6mm internal diameter) was used to confine the reline material to standardized area on denture base specimens. Ten additional Eclipse denture base specimens were prepared and relined using the same Eclipse resin. Shear bond test was carried out 24 hours after relining using an Instron machine at a crosshead speed of 1.0 mm/min. Data were analyzed using one-way ANOVA followed by Dunnett's T3 test (p=0.05).

Results:

Shear bond strength (mean±S.D. in MPa); the same superscripts indicate no significant difference (p>0.05).

PMMA (Meliodent)	Meliodent RR	14.5 ± 0.5 ^a
	Secure	9.9 ± 1.0 ^c
	Kooliner	4.5 ± 0.5 ^e
	Eclipse	NA
UDMA (Eclipse)	Meliodent RR	4.6 ± 0.7 ^e
	Secure	8.1 ± 0.7 ^d
	Kooliner	2.4 ± 0.5 ^f
	Eclipse	11.4 ± 0.6 ^b

Conclusion:

There was a significant difference in SBS values among denture base-reline material combinations (p<0.05) except for PMMA base-Kooliner and UDMA base-Meliodent RR reline combinations.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

PREPARATION FORM AND EMERGENCE PROFILES OF MAXILLARY METALLOCERAMIC CROWNS

Author:

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Objectives:

To compare the emergence profiles of crowns with their contralateral tooth, in vitro, and determine if there is any association between the design of tooth preparations and the resultant emergence profile.

Methods:

50 models used for single crown construction were examined. Measurements of the faciolingual width of the crowns and contralateral teeth were taken using digital calipers. Internal line angles and the margin width of dies and the emergence profile of the corresponding crowns were measured from longitudinally sectioned polyvinylsiloxane indices of preparations and associated crowns mounted on a flat-bed scanner using image analysis software.

Results:

Using Students t tests, no statistically significant differences ($p > 0.05$) were found for shoulder width (mean 0.94 ± 0.23 mm), internal line angle (mean $105.83 \pm 13.57^\circ$) or emergence profiles ($28.56 \pm 12.95^\circ$) in the different (anterior, premolar or molar) preparations or crowns. The mean emergence profiles for all crowns was statistically significantly greater ($p < 0.001$) than the contralateral tooth (mean $15.33 \pm 7.77^\circ$). Using linear regression, there was a weak statistical relationship between emergence profile and margin width (Emergence profile $^\circ = 31.352 - 2.973 \times$ margin width (mm)). There was no statistical association between the internal line angle and the resultant emergence profile.

Conclusions:

In this in vitro study, the emergence profiles of crowns were higher than the contralateral teeth. Maxillary metalloceramic crown preparations had shoulder widths that did not conform to recommendations in standard texts but line angles were within a satisfactory range. The margin width exerts a weak effect upon the emergence profile of the crown.

The Preliminary Program for IADR Pan European Federation 2006 (September 13-16, 2006)

RISK FACTORS, DIET AND ORAL MUCOSAL LESIONS IN INDIGENOUS SARAWAKIANS

Author:

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Objective:

To determine the association between risk habits and dietary consumption with prevalence of oral mucosal lesions in the indigenous people of Sarawak.

Materials & Methods:

A cross-sectional study was conducted in Sarawak, involving 248 indigenous people of Sarawak. Local respondents were interviewed house-to-house using a pre-designed questionnaire. Data on socio-demographic background, smoking, alcohol, quid chewing habits and dietary consumption were collected. An oral examination to detect oral mucosal lesions was done by a trained dental specialist. The data was then analysed using the χ^2 test and Fisher Exact test where applicable.

Results:

Respondents were between 34 to 81 years of age with a mean of 57.03 ± 11.14 years old. 77 (31.0%) respondents were males and 171 (69.0%) were females. Majority of the respondents were of Bidayuh ethnicity (170 respondents). Out of 248 respondents, 100 (40.3%) had oral mucosal lesions. Lesions identified were classed into 3 main groups - Potentially malignant lesion (Leukoplakia=9, Submucous fibrosis=1); Non-potentially malignant lesion (Denture stomatitis=25, Smoker's palate=5, other lesions=18); and 42 with Betel chewer's mucosa (undetermined malignant potential). Data on food items were classified into 10 categories; Carbohydrate Foods, Fat foods, Protein Foods, Sea foods, Vegetables, Fruits, Fermented/Salted Foods, Processed Foods, Beverages and Miscellaneous. There was a significantly higher prevalence of potentially malignant lesion in respondents who both chews quid and consume alcohol ($p=0.025$) and those who chews quid only ($p=0.036$). A significantly higher percentage of those who had no lesions consumed foods from fat foods (68.8%) and protein foods (64.0%) category compared to those with lesion.

Conclusion:

Significant differences in risk factor habits and food intake between respondents with and without lesions were noted. This study is supported by the following grants: Monbusho, Japan, 1996-1999 & IRPA RMK-8 Grant [06-02-03-0174 PR 0054/05-05], MOSTE, Malaysia.

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

SOCIAL FUNCTIONING AMONG REPAIRED CLEFT LIP AND PALATE PATIENTS

Author:

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Objective:

To determine the quality of life (QOL) in relation to social functioning dimension among repaired cleft lip and palate (CLP) patients and also to assess its influencing factors.

Methods:

A cross sectional study has been conducted from Jun to October 2004 among 120 repaired CLP patients aged 12 to 30 years old, recruited from six main government orthodontic clinics in Kuala Lumpur and Selangor. An assisted administered multidimensional QOL questionnaire customized from WHO-QOL and SF36 was employed. Data collection was done either at the clinic or at home for subjects who had completed or defaulted treatments. Data was collected and analyzed using SPSS Version 11.5.

Results:

Mean score that reflected social functioning was 17.6 points (95%CI: 16.90, 18.38). The score was then categorized into good, moderate and poor of which 53.0% of the subjects had demonstrated good and 42.0% had exhibited moderate social functioning score. Of the 4 items investigated under social functioning dimension, only 1 item which was "opportunity to succeed in life" was found to be affected by CLP status and its therapies. Factors that influenced social functioning were satisfaction with the information delivered by health personnel and the treatment outcome, types of clefts, treatment status and mother's education level.

Conclusion:

Quality of life of repaired CLP patients ranged from moderate to good with respect to social functioning dimension. Perhaps discovering the affected item and the influencing factors can provide us the focus of future intervention and may answer certain gaps unnoticed in the management of these patients such that a holistic approach to their healthcare can be offered.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

P.BETLE AND S.AROMATICUM - EFFECT ON THE ACID-PRODUCING ACTIVITY OF S.MUTANS

Author:

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It has been reported that both the *P. betle* (betel leaves) and *S. aromaticum* (clove) extracts have antibacterial activity towards *Streptococcus mutans*. However, there were no reports to date on the comparison of the effectiveness between the two extracts.

Objectives:

The purpose of this study was to compare the effect of crude aqueous *P. betle* leaves and *S. aromaticum* extracts on the growth and acid producing activity of *Streptococcus mutans* ATCC 25175.

Methods:

Crude aqueous *P. betle* leaves (PA) and clove extracts (CIA) were prepared by decoction. The effect of the extracts on the growth of *S. mutans* was determined from the number of bacterial cells grown in BHI broth in the presence of the extracts. Acid producing activity of the bacteria was analysed by pH drop assay.

Results:

Both the CIA and PA extracts showed inhibitory effect towards growth and acid producing activity of *S. mutans*. The inhibitory effect increases as the concentration of the extract increases. The PA extract showed better inhibitory effect towards growth of *S. mutans* at higher concentrations. At 10 mg/ml, the PA extract inhibited growth by almost 99 % whereas the CIA extract exhibited about 70 % inhibition. At this concentration, the CIA extract showed 30% reduction in acid producing activity, whereas the PA extract was more than 75% reduction. These inhibitory effects of the extracts may suggest its potential role in the prevention of dental caries.

Conclusions:

The PA extract showed a more potent inhibitory effect on the growth and acid producing activity of *Streptococcus mutans* compared with the CIA extract.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

P.BETLE AND ITS EFFECT ON SUCROSE DEPENDENT ADHERENCE OF S.MUTANS

Author:

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To date, very little information is available about *Piper betle* (*P. betle*) that are associated with anti-adherence activity towards oral microorganisms.

Objectives:

The purpose of this study was to investigate the effect of crude aqueous *P. betle* leaves extract on the sucrose dependent adherence of *Streptococcus mutans* (*S. mutans*) ATCC 25175.

Methods:

Crude *P. betle* leaves extract (CA) was prepared by decoction. The effect of the extract on the adhering property of *S. mutans* was determined from the number of bacterial cells grown on glass surface in BHI broth in the presence of sucrose and the extract. The glucan formation was investigated by measuring the cell-associated glucosyltransferase (CAG) activity via the amount of water-insoluble glucan formed. Scanning electron microscopy was used to further observe the effect of the extract on the glucan formation.

Results:

It was shown that the extract exhibited inhibitory effect on the adhering property of *S. mutans*. At a concentration of 4 mg/ml of CA, the cell-adherence was reduced by $56.9 \pm 4.1\%$. The CA extract also showed inhibitory effect towards CAG activity by almost 50 % at 1.5 mg/ml and almost 70 % at 2.5 mg/ml. Hence the effect is concentration dependent. From the SEM micrograph, it was shown that the glucan formation was reduced in the presence of the extract.

Conclusion:

The inhibitory effect of CA extract on the adhering property of *Streptococcus mutans* and glucan formation suggest that it may have a role in the control of dental plaque formation and subsequently, dental caries formation.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

EFFECT OF FLUORIDE MODIFIED TITANIUM SURFACES ON OSTEOBLAST RESPONSES

Author:

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Objectives:

The responses of human embryonic palatal mesenchymal (HEPM) cells on a fluoride modified titanium surface (Osseospeed™ Astra Tech, Mölndal, Sweden) were compared to two other surfaces: TiOblast™, Astra Tech, and a titanium surface prepared by blasting with the same sized titanium dioxide particles without the fluoride modification, creating a rough blasted surface (RB).

Methods:

HEPM cells were plated at micromass density (50,000 cells/10µL droplet) on each surface for 1, 3 and 7 days followed by analysis for cell proliferation, alkaline phosphatase specific activity and mRNA steady state expression for bone related genes (Alkaline phosphatase, Collagen Type I, Osteocalcin, BSP II, Cbfa1 and Osterix) by real-time PCR.

Results:

The different surfaces did not alter the mRNA expression for alkaline phosphatase, BSP II and Osterix. Expression of type I Collagen and osteocalcin were significantly higher ($p < 0.05$) with time of culture, although there was no significant difference in the gene expression among the titanium surfaces. By day 7, Cbfa1 expression on the Osseospeed surface was significantly higher than on the other two implant surfaces (expression on RB surface, the least, $p < 0.001$), although the cell number on the Osseospeed surface was reduced by 20% as compared to the TiOblast and TCP surfaces, and not significantly different from that on the RB surface. Cells grown on all the titanium surfaces expressed similar levels of alkaline phosphatase activity.

Conclusions:

The results indicate that the chemistry of the fluoride modified surface in synergy with the surface roughness may have a greater influence on the level of Cbfa1 (the key regulator for osteogenesis) expression than the unmodified titanium surfaces studied. This suggests that the Osseospeed surface may be better than TiOblast and RB surfaces for the growth and differentiation of osteoblast-like cells in vitro. Supported by: NIH R03DE014269, P60DE13076, R21DE016677 and Astra Tech.

The Preliminary Program for First African and Middle-East IADR Federation Conference (September 27-29, 2005)

GSTM-1 GENE POLYMORPHISM AND AGE CHARACTERISTICS IN ORAL CANCER PATIENTS

Author:

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Objectives:

To determine and compare the frequencies of GSTM-1 gene polymorphism in Malaysian Indians and Taiwanese oral cancer patients with betel-quid chewing habits; and to compare the mean age differences between these patients.

Methods:

A total of 31 oral cancer patients (20 Malaysian Indians, 11 Taiwanese) with betel-quid chewing habits were included in this study. The Malaysian Indian oral cancer subjects are all females (20 subjects) with the mean age 62.50 years old and the Taiwanese oral cancer subjects are mostly males (10 subjects) with the mean age 48.18 years old. The results from these patients were compared to 18 Taiwanese non-cancer patients (11 males, 7 females) with betel-quid chewing habits (mean age 49.11 years old). Polymerase chain reaction-based techniques were carried out using DNA extracted from the subjects' blood to detect GSTM-1 gene polymorphism.

Results:

A total of six Malaysian Indian oral cancer patients (30%), three Taiwanese oral cancer patients (27.3%) and five Taiwanese non-cancer patients (27.8%) show GSTM-1 gene polymorphism. These differences are not significant when tested by 2-sample t test. The mean age of Malaysian Indians and Taiwanese oral cancer patients is 62.50 and 48.18 years old respectively. This difference is significant ($P < 0.05$) when tested by 2-sample t test.

Conclusions:

No significant differences in GSTM-1 gene polymorphism were found between Malaysian Indians and Taiwanese oral cancer patients and between Taiwanese cancer and non-cancer patients. However, this study is preliminary in nature and requires a larger sample to validate the association between GSTM-1 gene polymorphism and susceptibility to oral cancer. The significant difference in the mean age of the oral cancer patients could be attributed to the development of betel-quid chewing habits at a younger age amongst the Taiwanese. This study is supported by the IRPA grant -06-02-03-0174 PR 0054/05-05 and NSC 93-2314-B-037-072

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

SERUM IGG ANTIBODY RESPONSE TO PERIODONTOPATHOGENS IN ADVANCED CHRONIC PERIODONTITIS

Author:

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Objectives:

To determine serum IgG antibody response to four periodontopathogens among three ethnic groups and to define the relationship with periodontal status.

Methods:

30 subjects with advanced chronic periodontitis and 30 healthy controls who were ethnically, gender and age-matched were selected in equal numbers from each race. Serum IgG antibody levels to Pg, Tf, Pi and Aa were assessed by enzyme-linked immunosorbant assay (ELISA).

Results:

Serum IgG antibody responses to all the 4 periodontopathogens were found both in the diseased and healthy subjects. Diseased group had significantly higher antibody titer as compared to healthy controls. Mean serum IgG antibody response to Pg was highest in both diseased and healthy groups. Mean serum IgG antibody response to Pi was found to be significantly higher in Malays while serum IgG antibody to Aa was lower in the Indian population. Mean IgG levels to Tf and Aa in the Chinese population were higher than those in Malays and Indians. In the total population, PPD were significantly associated with increased serum IgG antibody response to Pg, Tf and Pi. Clinical attachment loss was positively correlated with IgG antibody response to Pg and Aa.

Conclusions:

Differences in serum IgG antibody profiles to periodontopathogens; Pg, Tf, Pi, and Aa were found in Malays, Chinese and Indians in the present study, indicating either predominance in colonization by certain pathogens or either enhanced or poor response to their colonization. PPD were significantly associated with increased serum IgG antibody response to Pg, Tf and Pi and CAL was positively correlated with IgG antibody response to Pg and Aa. Study supported by Vote F 0131/2003C

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

COMPARISON OF MINERAL TRIOXIDE AGGREGATE AND CALCIUM HYDROXIDE IN IMMEDIATE AND DELAYED PULP CAPPING

Author:

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Objective:

The aim of this study was to compare pulpal reactions to mineral trioxide aggregate (MTA, Dentsply-Tulsa) and calcium hydroxide (Dycal, Dentsply-Caulk) following immediate and 24-hours delayed capping of exposed pulps.

Methods:

Seventy-two teeth with fully developed root apices from 6 adult *Macaca fascicularis* monkeys were divided into 12 test groups with 6 teeth per group per observation period i.e. at 7, 30 and 90 days. Class V cylindrical cavities were prepared in incisors and Class I cavities in molars using high speed diamonds before creating pulp exposures intentionally. All cavities were rinsed with 2.5% NaOCL, haemostasis assured prior to capping with either MTA or Dycal. The teeth were then restored with a glass-ionomer restorative material (Ketac-Fil, ESPE). Light microscopic examination of longitudinal H&E stained sections was carried out to quantify acute and chronic inflammatory response, reparative dentin formation, presence of dentin chips, tissue necrosis and mummification. Gram stains were used to identify presence of microorganisms. Data were analyzed using Mann-Whitney U test to determine differences between groups at each observation period.

Results:

There was no significant difference in inflammatory response at 7 days. For delayed pulp capping, 4 and 2 teeth of the Dycal group, and 2 teeth and 1 tooth of the MTA group were non-vital at 30- and 90-days observation periods respectively. More reparative dentin formation was observed in the groups treated with MTA at 30- and 90-days observation periods.

Conclusions:

It was concluded that pulp capping of pulps that were exposed for 24 hours had a poor prognosis. Pulp capping with mineral trioxide aggregate resulted in higher incidence and faster rate of reparative dentin formation. This study was supported by UM R&D Vote 4003-02-0002.

EXTRINSIC STAIN ASSESSMENT USING A STAIN SHADE GUIDE

Author:

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Assessment of extrinsic dental stain by the recognised Lobene Stain Index can be very subjective, particularly in determining stain intensity.

Objectives:

For the present study these were:(1) to produce a stain shade guide to aid the in vitro & in vivo assessment of extrinsic dental stain (2) to assess in vivo intra and inter examiner reproducibility of measuring extrinsic stain using the stain guide.

Methods:

Triplicate batches of acrylic teeth and clear perspex specimens were stained following multiple exposures to saliva, chlorhexidine and tea. The optical densities of stain on the perspex specimens were measured using a UV/visible light spectrophotometer and the mean values assigned to the corresponding stained acrylic teeth. These were subsequently made into a stain shade guide. Two examiners on 2 occasions used the stain guide to assess extrinsic stain on the anterior teeth of 10 volunteers. For comparison, stain was also assessed using the Lobene Stain Index. Intra and inter examiner reproducibility was determined using kappa statistics.

Results:

Using the stain guide improved intra examiner reproducibility of stain intensity (Examiner 1, $k = 0.89$, Examiner 2, $k = 0.87$) compared to using the Lobene Index (Examiner 1, $k = 0.61$, Examiner 2, $k = 0.80$). Similarly, inter examiner reproducibility was improved (stain guide, $k = 0.73$, Lobene Index, $k = 0.55$).

Conclusions:

The findings of this study would suggest that the use of the stain guide may help to improve reproducibility in the clinical assessment of extrinsic stain.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

THE ANTI-ADHERENCE PROPERTIES OF *PSIDIUM GUAJAVA* L. AQUEOUS EXTRACT

Author:

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Introduction:

The crude aqueous extract of *Psidium guajava* L. have been shown to exhibit anti-adherence activity and reduced the adherence of plaque microorganisms to saliva-coated glass surface by 43 % (Fathilah *et al.*, 2000).

Objectives:

In this study, focus was on the testing of the anti-adherence activity of the extract on selected early plaque settlers, *S. sanguis*, *S. mitis* and *Actinomyces* sp. These activities were first determined by the reduced population of bacteria able to bind to an extract-treated experimental pellicle on a glass surface and second by the adhering capacity of the bacteria to hexadecane.

Methods:

The extract-treated experimental pellicle was prepared by layering the inner surface of a borosilicate glass tube with 2ml of clarified whole saliva for 2min before it was washed with saline and exposed to 2ml of 20mg/ml *Psidium guajava* extract (Fathilah *et al.* 2003). The reduction in the cell-surface hydrophobicity of the bacteria was determined by measuring the diminishing adhering capacity of the bacteria cells to hexadecane.

Results:

Data obtained from the study showed that the aqueous extract of *Psidium guajava* at 20mg/ml reduced the binding capacity of the experimental pellicle to *S. sanguis*, *S. mitis* and *Actinomyces* sp. by 28.1 ± 1.8 , 48.8 ± 2.4 and 40.4 ± 0.8 %, respectively. At 1mg/ml, the extract has also been shown to reduce the cell-surface hydrophobicity of these bacteria by 54.1 ± 2.4 , 49.9 ± 4.8 and 40.6 ± 2.9 %, respectively.

Conclusion:

With less capacity to bind to the experimental pellicle, the colonization of *S. sanguis*, *S. mitis* and *Actinomyces* sp. during the early phase of plaque formation may be minimized. The reduction in cell-surface hydrophobicity of the bacteria cells may also contribute to this effect. This study was supported by the Vote F Grant, University of Malaya.

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

EFFECT OF MOUTHRINSES ON SURFACE MICROHARDNESS OF SELECTED DENTAL COMPOSITES

Author:

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Objective:

To compare the surface microhardness of composites (Spectrum[®]TPH, Filtek[™]Z350, Ceram•X mono and Ceram•X duo-enamel shade) before and after immersion in alcohol containing mouthrinses (Listerine), alcohol-free mouthrinses (Oral-B) and experimental herbal mouthrinses based on plant extract (mouthrinses X, Y and Z).

Methods:

60 disc-shaped specimens of approximately 10mm x 2mm were prepared from various composites using perspex split mould and was cured for 40 seconds. The irradiated surface was polished using Sof-Lex pop-on polishing discs. The specimens were randomly divided to 6 groups. Microhardness was recorded before immersion (control group) using a load of 200g for 15 seconds using Vickers microhardness tester, (Shimadzu Corp, Kyoto, Japan). All specimens were then immersed in 20ml of Listerine, Oral B- Tooth and gum care alcohol-free mouth rinses, Experimental Mouth rinses X, Y and Z and distilled water for 24 hours at 37^o C, after which micro hardness value was measured again. Data collected was analyzed using one-way ANOVA / Games-Howell post-hoc test for multiple comparisons between groups. Specimens were also subjected to surface analysis using AFM (Ambios Technology Universal Scanning Probe Microscopy[™]).

Results:

Filtek Z350 exhibited the highest Vickers microhardness number (VHN) and Ceram X Duo had the lowest VHN before immersion. All tested composite showed significant decreased in surface microhardness (VHN) compared to before immersion. Filtek Z350 showed the highest VHN and TPH Spectrum showed the lowest VHN after immersion. Ceram X Duo showed the roughest surface before immersion. The surface roughness of Ceram X Mono was high when immersed in experimental mouthrinses.

Conclusions:

Filtek Z350 exhibited significantly higher VHN compared to other composites tested. All composites showed significant decreased in VHN compared to before immersion. There was no significant different of VHN between mouthrinses, however it was material dependent. This study was supported by the Vot F:Grant no F0350/2005C, University of Malaya.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

HTERT EXPRESSION AND TELOMERASE ACTIVITY IN ORAL CARCINOGENESIS

Author:

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Telomerase is a ribonucleoprotein complex with core units of human telomerase RNA (hTR) and human telomerase reverse transcriptase (hTERT). Telomerase activity is found in stem cells, germ cells and tumour cells but not in the majority of somatic cells. Telomerase activity is associated with cellular immortalization and tumorigenesis and this is generally due to the expression of hTERT, the catalytic subunit of telomerase.

Objectives:

To detect hTERT expression and telomerase activity and to correlate these with the histological progression of oral carcinogenesis.

Methods:

Specimens clinically diagnosed as potentially malignant oral lesions (n=8) and oral squamous cell carcinoma (n=14) were included in the study. Normal oral mucosa samples (n=5) were obtained from archival specimen collection. Analysis of hTERT expression levels on paraffin-embedded sections were done by immunohistochemistry (IHC) whilst Telomeric Repeat Amplification Protocol (TRAP) assays were performed on cultured cells and fresh tissues (15/27) to detect telomerase activity.

Results:

Dysplastic and neoplastic oral epithelia showed increased percentage of hTERT positive cells (Grade 4: >50% positive staining nuclei) with intense staining in superficial layers of the epithelia unlike normal oral epithelia which showed positive staining mainly in the proliferative progenitor compartments. Telomerase activity correlated with hTERT protein expression in tumour tissues but not in normal, hyperplastic and dysplastic tissues where telomerase was not detected with TRAP assays.

Conclusion:

There seems to be an up-regulation of hTERT expression with the progression of oral cancer and therefore indicates the feasibility of IHC detection of hTERT protein as a potential prognostic marker in oral carcinogenesis. Expression of hTERT seems to be an early event in oral cancer although its expression alone may not imply functional telomerase activity. This study is funded by Vote F 0213/03, University of Malaya and IRPA RMK-8 Grant [06-02-03-0174 PR 0054/05-05], MOSTE, Malaysia.

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

ORAL HEALTH AND QUALITY OF LIFE OF MALAYSIAN IBAN POPULATION

Author:

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Objective:

To investigate the oral health status and oral health-related quality of life of older Iban population using the Geriatric Oral Health Assessment Index (GOHAI).

Methods:

A cross sectional survey was conducted among a sample of 259 older Iban population aged 50 to 87 years living in longhouses of Kapit District, Sarawak. Oral health status measured dental caries and periodontal diseases. The assessment of oral health-related quality of life was performed by face to face interview using the modified GOHAI questionnaire.

Results:

There was about 1.4 female to every male subject. Majority of them had never attended school (76.1%). Results showed that the disease prevalence for caries (86.5%) and periodontal diseases (98.4%) were high. The mean GOHAI score was 28.72 (S.D + 4.21) and the score ranged between 15 to 36. Analysis of GOHAI scores revealed that the most common item reported by the subjects was 'feel nervous/self conscious because or problems with teeth/gums'(68.3 %) and the most uncommon item reported was 'able to swallow comfortably' (18.1%). When mean GOHAI scores for self-rated health and self-rated oral health status were compared by demographic characteristics, only the latter was found to be statistically significant at $p=0.000$. Results also indicated that the relationship between selected oral health status parameters and oral health-related quality of life scores were weak.

Conclusion:

The older Iban subjects in this study were found to have high caries and periodontal disease prevalence and a moderate oral health-related quality of life.

This project was supported by the Institute of Postgraduate Study Grant (No: F0105/2005C) and the Centre for Malaysian Pribumi Studies, University of Malaya. The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

EFFECT OF OZONATED-WATER ON IN-SITU PLAQUE AND WHOLE SALIVA

Author:

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Objectives:

To determine the in-situ antibacterial effect of 0.1 ppm ozonated-water on plaque microorganisms and salivary calcium and protein.

Methods:

The study was carried out as double blind, randomised study. Forty healthy volunteers were randomly divided into two groups (Group1-control, Group2-test) of 20 individuals. They were instructed not to brush their teeth 24 hours prior to sample collection. Pre-rinse 'stimulated whole saliva' and '24-hour supragingival plaque' samples were collected from the buccal and lingual surfaces of the three most posterior teeth on the upper right and lower left quadrants of both the groups. Following that Group1 was made to gargle with 20 ml distilled water and Group2 with 20 ml 0.1ppm ozonated-water for 30 seconds. 20 minutes post-rinse saliva and plaque samples were collected from the three most posterior teeth on the upper left and lower right quadrants. The total-microbial, anaerobic, streptococcal and candidal concentrations of plaque were quantitatively determined based on the growth of colony forming units (cfu) on selective media plates. Microbial concentration of plaque and saliva were also qualitatively assessed using fluorescence staining microscopy. Salivary calcium and protein content were determined by titration and spectrophotometry respectively.

Results:

Results showed a significant lower total-microbial and anaerobic load in the post-rinse samples of ozonated-water treated group compared to the distilled water treated group ($p < 0.01$ and $p < 0.02$). There was an average reduction of 45.35% (SD±26.24) of total bacteria and 51.71% (SD±18.79) of anaerobic bacteria observed in Group2. These findings positively correlated with fluorescence staining results. No significant changes in the concentration of salivary calcium and protein were observed for both groups.

Conclusion:

Gargling with 0.1ppm ozonated-water has shown statistically significant antimicrobial effect on plaque microorganisms but did not induce changes to the protein and calcium content of saliva. This study was supported by VoteF F0144/2005A -University Malaya.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

EFFICACY OF TOPICALLY-APPLIED HYALURONATE GEL FOR TREATMENT OF CHRONIC PERIODONTITIS

Author:

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Hyaluronic acid is a glycosaminoglycan of high molecular weight in the extracellular matrix of periodontal soft tissues. Manufactured Sodium Hyaluronate, produced by non-animal derived biotechnology was utilized in this study.

Objective:

To investigate the efficacy of topical application of Hyaluronate gel (Gengigel®) for treating Chronic Periodontitis as an adjunct to scaling and root planing.

Methods:

A number of 229 teeth with moderate (4-6 mm) and deep (>6 mm) periodontal pockets were selected in 20 patients with chronic periodontitis in this test-placebo parallel design double-blind study. The subjects were allocated into the test or control groups by code randomization. Clinical parameters which included plaque index, gingival index, bleeding index, probing pocket depth and clinical attachment level were assessed at baseline (prior to treatment), 3-weeks, and 6-weeks intervals. After baseline assessments, all patients received oral hygiene instructions and were treated with full-mouth scaling and root planing at baseline. In addition, Hyaluronate gel (0.8%) for professional application or placebo gel was administered subgingivally in the test or control sites respectively at baseline by the investigator. Home-care topical application of hyaluronate gel (0.2%) or placebo gel was applied at the test or control sites respectively twice a day for 3 weeks after toothbrushing following breakfast and dinner. The data was subjected to statistical analysis by the SPSS 12 statistical package. Comparison of the data between the test and control groups was investigated by Independent t-test and Mann Whitney test.

Results:

No significant differences between test and control groups could be found, except for the gingival index at 3-weeks interval with significant improvement in the Hyaluronate gel group.

Conclusion:

Hyaluronic acid gel resulted in significant clinical improvement only in the gingival index at the 3-weeks interval, immediately after its applications as compared to placebo gel in

Chronic Periodontitis. (Vote F0168/2005A, University Malaya). The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

EFFECT OF LUTING CEMENTS ON THE STRENGTH OF PROCERA COPINGS

Author:

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Objectives:

To investigate the effect of conventional and resin luting cements on the fracture strength of Procera AllCeram copings (Nobel Biocare, Goteborg, Sweden).

Methods:

Six metal dies were duplicated from the prepared maxillary first premolar tooth using non-precious metal alloy (Wiron 99). Thirty Procera copings with 0.6 mm thickness were manufactured using CAD/CAM technology. Three types of luting cements were used; zinc phosphate cement Elite (GC Corporation, Tokyo, Japan), glass-ionomer cement Fuji I (GC Corporation, Tokyo, Japan) and dual-cured composite resin cement Panavia F (Kuraray Medical Inc., Okayama, Japan). Ten copings were cemented with each type. Two master dies were used for each group and each of them was used to lute five copings. All copings were cemented as per manufacturer's instructions and stored for 24 hours in distilled water at 37°C. The copings were seated with 5 kg of force for 10 minutes. Each coping was subjected to a compressive load until failure at a crosshead speed of 1mm/minute. The fractured copings were examined using Scanning Electron Microscope (SEM).

Results:

Statistical analysis carried out using ANOVA and Duncan's multiple range test revealed significant difference between the three groups ($P < .001$). The mean fracture strength of Procera copings cemented with Elite, Fuji I and Panavia F were 1091.9 N, 784.8 N and 1953.5 N respectively. The Procera core examined by SEM had very little porosity with the retention of resin cement only on the intaglio surface of Procera copings.

Conclusions:

The fracture resistance of Procera AllCeram copings was significantly affected by the luting agent used. This study was supported by Vote F (F0155/2005A); University of Malaya, Kuala Lumpur, Malaysia.

Dental Materials: III - Ceramics and Cements. The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

WARM VERTICAL COMPACTION VERSUS LATERAL COMPACTION FOR ROOT CANAL OBTURATION

Author:

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Objectives:

This study compared warm vertical compaction with lateral compaction for obturating root canals with either a polymer-based resin system or gutta-percha. Quality of obturation was evaluated by (i) analysis of the canal area occupied by filling core materials, sealers and voids at three cross-sectional levels and (ii) SEM examination.

Methods:

Single canals in 64 mandibular premolars were instrumented, irrigated and divided into four equal groups. They were root filled as follows: lateral compaction/resin (RealSeal™, SybronEndo) (LC/R), lateral compaction/gutta-percha with AH Plus™ (LC/GP), warm compaction/resin (WC/R) and warm compaction/gutta-percha (WC/GP). One specimen from each group, randomly chosen for SEM examination, was longitudinally sectioned so that the dentine-filling interface could be evaluated. The remaining teeth were sectioned horizontally at 1 mm (L1), 3 mm (L3) and 6 mm (L6) intervals from the obturated canal terminus. Cross-sectional areas of filling core materials, sealers and voids were measured using a Leica Qwin Colour (RGB) image analysis system. Data were analyzed using independent sample t test and Mann-Whitney U test.

Results:

Techniques showed no significant differences for canal obturation with resin at L1 and L3 ($p > 0.05$). However at L6, obturation quality was significantly better for warm compaction ($p < 0.05$). For obturation with gutta-percha, there were no differences between the two techniques at L1 ($p > 0.05$). However at L3 and L6, warm compaction was significantly better than lateral compaction ($p < 0.05$). Under SEM, for gutta-percha obturation using both techniques, a uniform gap was observed between the sealer and gutta-percha and also between the sealer and dentine. However, for resin obturation, there was no evident gap.

Conclusions:

Both techniques showed comparable obturation quality at the apical level (L1). However, at more coronal levels of the canal, warm compaction was better than lateral compaction, especially for obturation with gutta-percha. (This study was supported by P0191/2006B, University of Malaya).

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

LOAD AT FRACTURE OF TURKOM-CERA COPINGS USING DIFFERENT LUTING CEMENTS

Author:

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Objectives:

The objective of this study was to investigate the effect of different luting agents on the fracture strength of Turkom-Cera (Turkom-Ceramic (M), Kuala Lumpur, Malaysia) Fused Alumina copings.

Methods:

Standardized metal dies were duplicated from the prepared maxillary first premolar tooth using non-precious metal alloy (Wiron 99). Thirty Turkom-Cera copings of 0.6 mm thickness were fabricated. Three types of luting media were used; zinc phosphate cement Elite (GC Corporation, Tokyo, Japan), glass-ionomer cement Fuji I (GC Corporation, Tokyo, Japan) and dual-cured composite resin cement Panavia F (Kuraray Medical Inc., Okayama, Japan). Ten copings were cemented with each type. All copings were cemented to their respective dies according to manufacturer's instructions and received a static load of 5 kg for 10 minutes. After 24 hours of storage in distilled water at 37°C, the copings were vertically loaded until fracture using Instron Universal Testing Machine at a crosshead speed of 1mm/minute. The mode of fracture was then determined.

Results:

Statistical analysis carried out using ANOVA and Post Hoc analysis using Scheffe's Test revealed significant difference in the load at fracture between the three groups ($P < 0.001$). The mean fracture strength of Turkom-Cera copings cemented with Elite, Fuji I and Panavia F were 1537.4 N, 1294.4 N, and 2183.6 N, respectively. There was no evidence of association between mode of fracture and fracture strengths ($P > 0.05$). Moreover, there was no evidence of association between mode of fracture and treatment group ($P > 0.05$).

Conclusions:

Luting agents have an influence on the fracture resistance of Turkom-Cera copings. This study was supported by IPPP-P019/2006C; University of Malaya, Kuala Lumpur, Malaysia.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

FRACTURE STRENGTH OF TURKOM-CERA COMPARED TO TWO ALL-CERAMIC SYSTEMS

Author:

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Objectives:

This study was carried out to compare the strength of 3 all-ceramic systems; Procera AllCeram (Nobel Biocare, Goteborg, Sweden), Turkom-Cera Fused Alumina (Turkom-Ceramic (M), Kuala Lumpur, Malaysia) and In-Ceram (Vita Zahnfabrik, Bad Sackingen, Germany) cemented with resin luting cement Panavia F (Kuraray Medical Inc., Okayama, Japan).

Methods:

Six master dies were duplicated from the prepared maxillary first premolar tooth using non-precious metal alloy (Wiron 99). Thirty copings of 0.6 mm thickness were fabricated from each type of ceramics (10 for each group). Two master dies were used for each group and each of them was used to lute five copings. All groups were cemented with Panavia F according to manufacturer's instructions and received a static load of 5 kg during cementation. After 24 hours of distilled water storage at 37°C, the copings were vertically loaded using a universal testing machine at a crosshead speed of 1mm/minute.

Results:

Turkom-Cera had the highest mean fracture strength (2183.6 ± 164.09 N) compared to In-Ceram (2041.7 ± 200.43 N) and Procera AllCeram (1953.5 ± 210.68 N). Statistical analysis were carried out using ANOVA and Post Hoc analysis using Scheffe's Test showed that the mean fracture strength of Turkom-Cera was significantly more than Procera AllCeram. There was no significant difference between In-Ceram and Procera AllCeram and also between Turkom-Cera and In-Ceram ($P < .05$).

Conclusions:

The strength of Turkom-Cera was higher than that of Procera AllCeram and In-Ceram. This study was supported by IPPP-P019/2006C; University of Malaya, Kuala Lumpur, Malaysia.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

EFFECT OF WATER ON THE FLEXURAL STRENGTHS IN DENTURE REPAIR

Author:

S.S. ELHADHIRY, Y.T. ARIFFIN, and N. YUNUS, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The study was to investigate the flexural strength of poly methyl methacrylate (PMMA) denture base specimens when they were repaired using various methods at different periods of water immersion.

Methods:

Ninety-six rectangular specimens measuring 64 x 10 x 2.5 mm were fabricated from heat-polymerized PMMA. After one month water immersion at 37C°, the specimens were randomly divided into 4 groups. Control group was left intact without repair (C) Other specimens were cut into 2 halves and repaired with an auto-polymerized resin. One group was prepared with conventional repair method (R). Two of the repair groups had in addition a cavity (21.5 X 3.5 X 2 mm) prepared at the joint ends to provide space for reinforcement material; one group was repaired with E-glass fiber embedded within the cavity (R+Ca+G) while the other group was repaired without fiber reinforcement (R+Ca). A three-point flexural bending test was carried out to evaluate the flexural strength of all groups after one day, one week and one month water immersion. Data were analyzed using two- way ANOVA and Dunnett T3 ($p=0.05$).

Results:

Flexural strength values (mean±S.D. in MPa). The same superscripts indicate no significant difference ($p>0.05$)

	One Day	One Week	One Month
C	81.7±2.2 ^a	79.7±1.5 ^{ab}	73.4±4. ^b
R+Ca+G	61.9±1.9 ^c	61.9± 2.1 ^c	62.2±3.9 ^c
R+Ca	50.3±6.2 ^d	54.3±4.4 ^{cd}	52.9±7.8 ^{cd}
R	54.9±4. ^{cd}	54.6±5. ^{cd}	33.6±5.5 ^e

ANOVA showed significant difference for the repair methods, immersion period and their interactions ($p<0.05$). After 1 month water immersion, C and R groups showed significant decrease in the flexural strength ($p<0.05$) but no significant difference were observed in R+Ca and R+Ca+G groups.

Conclusion: The study showed that glass fiber reinforced the repair strength. The effect of cavity preparation in the repair joints was to decrease the deterioration effect of water on the flexural strength.

ACCURAY OF IMPLANT TRANSFER IMPRESSIONS WITH THREE INTERNAL CONNECTION DESIGNS

Author:

E. SULAIMAN, University of Malaya, Kuala Lumpur, Malaysia, **D.J. SETCHELL**, UCL Eastman Dental Institute, London, United Kingdom, and **L.J. SEARSON**, Eastman Dental Institute for Oral Health Care Sciences, London, United Kingdom

Purpose:

This laboratory study investigated the accuracy of single tooth implant transfer impressions of three systems with different implant-abutment internal connection designs [Ankylos(Dentsply Friadent), Replace Select (Nobel Biocare) and Neoss (Neoss Ltd.)].

Materials and methods:

The pickup (direct/open-tray) impression technique at fixture level was used using President polyvinyl siloxane, an addition silicone impression material to produce thirty stone casts (ten for each implant system) with implant analogues. The Reflex Microscope was used to calculate distances and angles of three-dimensional coordinates of optical targets attached to a test coping placed on the implant/analogue and on a reference plane positioned on the occlusal surface of the master model/stone casts. Differences in the anteroposterior, mesiodistal, rotation, inclination and perpendicular height offset positions between the analogues and corresponding master implants were calculated to allow pair-wise comparisons. The results were analysed using 95% limits of agreement.

Results:

The results showed that the Ankylos system produced the narrowest 95% limits of agreement for all the variables measured, indicating that the transfer impression for this system was more reliable in producing more accurate working casts under the experimental conditions. Wider limits of agreement from the Replace Select system suggested a greater variation in the position of analogues from the master implants. Errors in the rotational position, axial inclination and perpendicular height offset for the Replace Select system were significantly greater compared to those for the other two systems.

Conclusion:

The Ankylos, Replace Select and Neoss systems, each with different internal connection design, showed different degrees of accuracy of the transfer impressions for single tooth implants taken at fixture level. Some of these differences might be clinically significant and would require adjustment or even remaking of the final prosthesis.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

EFFECT OF POLISHING ON MATRIX-FORMED SURFACES OF RESIN COMPOSITE

Author:

R.M. ROHANI, university of malaya, lui joo loon, kuala lumpur, Malaysia

Objective:

To determine which polishing system will result in the smoothest surface for the resin composites tested and to know whether there is an interaction between the resin composites Filtek Supreme (3M ESPE Dental products, St Paul Minn USA), Esthet-X (Dentsply/Caulk USA) and Spectrum (Dentsply/Caulk, USA) with various polishing methods.

Methods:

Forty specimens were made for each material (10mm in diameter and 2mm thick). The specimens were divided into four groups according to the polishing systems: group 1-Matrix finish (control), group 2-Enhance discs (Dentsply/Caulk, USA) and POGO micro polisher discs (Dentsply/Caulk, USA), group 3-Enhance system (Dentsply/Caulk, USA) and group 4-Sof Lex discs (Dentsply/Caulk, USA). The specimens were polished and then the mean surface roughness (Ra) was determined with a profilometer (Surftest, Mitutoyo, Japan). The data were subjected to analysis of variance (ANOVA) and Dunnett T3 post hoc test.

Results:

The Enhance polishing system showed significantly highest mean roughness value for all the resin composites tested whereas the matrix finish which was the control group demonstrated a significantly lowest mean roughness value for all resin composites tested. Of the materials investigated, Filtek Supreme resulted in significantly lowest mean roughness values with all the polishing methods when compared to the other resin composites. Esthet-X and Spectrum displayed variable roughness depending on the polishing systems used. For Filtek Supreme, the lowest mean Ra was obtained with Enhance and POGO. However, Sof Lex polishing discs produced the lowest mean roughness value overall.

Conclusions:

In general, Sof Lex is to be recommended as the preferred polishing method for Filtek Supreme, Esthet-X and Spectrum as it produced the lowest overall mean roughness value. The combination of Enhance discs and POGO produced a smoother surface for all resin composites tested when compared to the Enhance system. Study supported by Vote F 0215/2004A.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

EVALUATION OF SURFACE ROUGHNESS AND DISCOLOURATION OF VARIOUS COMPOSITE RESINS

Author:

R. AHMAD, University of Malaya, Kuala Lumpur, Malaysia, and K.G. LIM, Klinik Pergigian Teluk Intan, Perak, Malaysia

Objective:

To evaluate the surface roughness and colour stability of several composite resins after immersion in coffee solution.

Method:

Four types of composite resins (Z-250, P-60, Z-100 & A-110) (3M Co., St. Paul, MN, USA) were evaluated. Ten specimens (10mm diameter x 2mm thickness) were fabricated for each group and subjected to polishing with aluminium-oxide disc (Sof-Lex™, 3M Co., St. Paul, MN, USA). Each specimen was polished in a sequential manner from the coarsest to the finest disc. For Z-250, 10 additional specimens were fabricated and not subjected to polishing treatment (surfaces were as cured against the mylar strip). All specimens were immersed in coffee solution and incubated at 100% relative humidity at 37°C±1°C for 7 days. Specimens were analyzed for surface roughness using a profilometer prior to immersion in coffee solution and at day seven. A spectrophotometer was used to determine the initial colour and the colour change after 24 hours and 7 days of immersion. Independent samples t-test (to compare mylar-cured Z250 and polished Z250), one-way ANOVA (to compare between polished groups) and Scheffe's statistical tests were applied to the data ($\alpha=0.05$).

Results:

Mylar-cured Z250 showed statistically lower mean surface roughness compared to polished Z250 before and after 7 days immersion but recorded statistically higher colour changes after 24 hours and 7 days immersion compared with polished Z250. When the polished groups were compared, A-110 showed the greatest colour changes after 24 hours and 7 days immersion and the highest surface roughness before and after 7 days immersion and the mean difference was statistically significant ($p<.05$) compared with Z-250, P-60 and Z100.

Conclusion:

Mylar-cured Z250 was significantly smoother than polished Z250 but discoloured more ($p<.05$) than polished Z250. Microfilled composite A-110 was significantly rougher and showed greater discolouration than hybrid composite Z-250, P-60 and Z100.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

REMAINING DENTIN THICKNESS OF TEETH AFTER METAL-CERAMIC CROWN PREPARATION

Author:

Y.C. MAH, B.T. ONG, and C.G. TOH, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To compare the remaining dentine thickness (RDT) between well-aligned and rotated maxillary central incisors and first premolars after metal-ceramic crown preparation. To identify areas of thin dentine after crown preparation.

Methods:

Twenty each of freshly extracted sound human maxillary central incisors (MD=8.70±0.26mm, LP=7.18±0.47mm) and first premolars (MD=7.73±0.12mm, BP=9.93±0.30mm) were randomly selected and mounted with their adjacent in good alignment for one group and at 45° mesio-buccal rotation for another group (n=10). Metal-ceramic crown preparation was carried out by a single operator. Rotated teeth were prepared to correct its malalignment with final restoration. The teeth were sectioned transversely at various levels of the crowns and RDT was measured. Areas of thinnest dentin were identified and data analyzed using Student's t-test.

Results:

The RDT was significantly less on the palatal and mesial of mid-incisal portion and on labial and mesial of the mid-cervical portion for the rotated than the well-aligned central incisors. The RDT was significantly less on the mesio-buccal of the occlusal portion and on the mesio-buccal and mesio-palatal of the middle portion for the rotated than the well-aligned premolars (p<0.05). The thinnest area among all the specimens studied was the mesial aspect of the mid-incisal portion of the rotated maxillary central incisors (0.30 ± 0.15mm). RDT of the premolars exceeded 1.00mm.

Conclusions:

The thin areas with high risk of pulpal exposure is the mesio-buccal aspects of well-aligned central incisors at incisal third of prepared crown. With correction of alignment in preparing rotated incisors, there is increased risk of pulpal exposure at mesial aspect of incisal third and mid-crown levels. The thinnest RDT is at the mesial aspect of incisal third of rotated central incisors. There is less risk of pulpal injury to well-aligned or rotated premolars.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

DENTAL FEAR AND CARIES EXPERIENCE AMONGST ANTENATAL MOTHERS

Author:

V. SAVITHRI, and R. ESA, University of Malaya, Kuala Lumpur, Malaysia

Introduction:

Despite the advances in modern dentistry, dental fear continues to be an important, if not the major component of distress, to both patients and clinicians alike. Dental fear has been shown to be one of the strongest predictors of irregular dental attendance, thus contributing to poor oral health.

Objectives:

The aim of this study was to assess the relationship between dental fear and caries experience amongst antenatal mothers and also to identify specific fear provoking situations.

Methods:

A cross-sectional study was conducted on a sample of 407 antenatal mothers from 4 Maternal and Child Health clinics in the district of Seremban. It consisted of a face to face interview survey utilizing the Kleinknecht's Dental Fear Survey Questionnaire and an oral examination.

Results:

The overall prevalence of dental fear was 94.1% of which 67.6% of the subjects reported low fear levels, 26.5% were moderately fearful and none were highly fearful. Only 5.9% of the subjects reported no fear. The caries prevalence was 85.7% with a mean DMFT score of 4.59. Subjects who were moderately fearful were 2.7 times more likely to have decayed teeth compared to those in the 'no fear' group (OR = 2.722; 95% CI =1.011-7.332). The drill and anaesthetic needle were identified as the most fear provoking objects.

Conclusions:

This study highlighted that dental fear is a common problem among antenatal mothers resulting in higher number of decayed teeth. Recognising such fears and instituting appropriate management strategies will ultimately improve oral health and utilization of oral health services.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

HEALING OF DIODE LASER WOUNDS IN MONKEY PALATAL MUCOPERIOSTEUM

Author:

C.H. SIAR¹, K.H. NG², G.E. ROMANOS³, and C.G. TOH¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Institute for Medical Research, Malaysia, Kuala Lumpur, ³Dental School Frankfurt, Germany

Objectives:

This study investigated the effects of diode laser on wound healing of palatal mucoperiosteum incisions in monkeys.

Methods:

Sixteen parallel incisions using diode laser (980 nm) and scalpel were performed in the hard palate of each of two adult monkeys. Power settings of 5, 10 and 15 watts (continuous mode, 200µm glass fibre, without irrigation) were used for the laser incisions. Wounds were harvested at 3, 7, 14 and 28 days' post-wounding time schedule. The specimens obtained were formalin-fixed and processed routinely. Five micron thick sections were prepared and stained with Haematoxylin-eosin, Masson-trichrome and Periodic acid Schiff reagent. Histological evaluation was performed blind.

Results:

A linear relationship between the severity of tissue necrosis and inflammation, with the power setting used in laser incisions. By day 3, both scalpel and 5 watt laser incisions showed similar wound healing. An intact epithelial covering and connective tissue formation were evident for both types of incisions. At 10 and 15 watt power settings, the laser incisions showed not only a wider area of tissue destruction, but the thermocoagulative changes extended deeply to involve the submucosal salivary glands. Consequently at day 28, a defect caused by the tissue destruction remained evident at the wound site, and healing by secondary intention was delayed.

Conclusion:

Current findings suggest that at low power setting of 5 watts, 980nm-diode laser produces precise mucosal wounds with healing rates comparable with those of scalpel wounds. At higher power settings, it showed good tissue penetrative properties, and this could be utilized for the ablation of deeply seated soft tissue pathologies.

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

INFLUENCE OF CAVITY DISINFECTANTS ON MICROLEAKAGE OF CLASS II COMPOSITE RESTORATIONS

Author:

H.P. CHEW, and **C.G. TOH**, University of Malaya, Kuala Lumpur, Malaysia

Studies have shown that viable organisms remain on the dentinal surface after cavity preparation. Hence antibacterial solutions have been used after cavity preparation to disinfect affected dentin. A potential problem for use of a disinfectant with composites and dentin bonding agents is the possibility of altering the seal at the resin-tooth interface.

Objective:

To investigate the influence of 2 cavity disinfectants on microleakage of Class II composite restorations.

Methods:

Thirty non-carious human premolars were randomly divided into 2 test groups and 1 control group. Two proximal cavities were prepared on each tooth with one of the gingival margin placed about 1mm above and the other about 1mm below the amelo-cemental junction. The teeth in the test groups were treated with cavity disinfectants Tubulicid Red Label (Dental Therapeutics AB) and Bisco Cavity Cleanser (Bisco Dental Products) respectively. The teeth in the control group were not treated with any cavity disinfectant. All cavities were etched, Prime & Bond NT (Dentsply De Trey) applied before restoring with composite resin, TPH Spectrum (Dentsply De Trey). The specimens were thermocycled in methylene blue, embedded and sectioned into 3 parts bucco-lingually. The degree of dye penetration was evaluated according to a numerical criteria. The Mann-Whitney U Test was used to analyze the data.

Results:

It was found that there was no significant difference ($p < 0.05$) in the amount of microleakage between the Tubulicid group and the control group, at both the enamel and dentinal margins. There was significantly more leakage ($p > 0.05$) in the Bisco group as compared to the control group at both the enamel and dentinal margins.

Conclusion:

It is concluded that the use of Tubulicid Red Label does not affect the seal at the resin-tooth interface while Bisco Cavity Cleanser increases the microleakage at the resin-tooth interface. This study was supported by UM Vote F0398/2001A

Saturday, 28 June 2003 Svenska Massan Exhibition Hall B

81st General Session of the International Association for Dental Research (June 25-28,2003)

ORAL HEALTH EXPERIENCES AND PRACTICES WHILE UNDERWATER AMONG SUBMARINERS

Author:

N.A. RAHIM, R. SAUB, and R.J. RAJA LATIFAH, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

The aim of the study was to describe the underwater oral health experiences and practices among submariners.

Methods:

Eighty-six Royal Malaysian Navy (RMN) submariners training in France, who had undergone at least one cycle of underwater training, were selected to participate in a self-administered questionnaire survey. The survey elicits information on oral health experiences and practices.

Results:

The main findings for the quantitative component were: Seven percent of the respondents reported oro-facial pain and discomfort while under water; 9.3% reported bleeding gums while underwater; 12.8% of the experienced halitosis while underwater. About 82% of those with oral problems reported disruption of their daily activities while underwater. More than 82.5% of them brush their teeth at least twice a day and more than 94.2% rinse after meals regardless of whether they were underwater or on land. Most do not floss when underwater or on land. A high proportion snacked (769.8%). About 49% of the respondents reported increased frequency in the consumption of carbonated drinks while underwater.

Conclusion:

It is concluded that dental emergencies, such as toothache and TMJ pain and discomfort, occurs during submarine operations and disrupt submariners' daily activities. This poses a treat to submarine operations. High proportion of submariners snack and consume carbonated drinks when they are underwater and when they are on land as carbonated drinks are easily available in the submarine.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

ERG POLYMORPHISM AND ALVEOLAR BONE LOSS IN POSTMENOPAUSAL MALAY WOMEN

Author:

H. TAIB¹, D. SWAMINATHAN¹, A. REHMAN², and A. AHMAD², ¹University of Malaya, Kuala Lumpur, Malaysia, ²Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

Depletion of estrogen production and secretion in postmenopausal women may lead to rapid bone loss and decreased bone mineral density (BMD). Decreased systemic BMD may also affect oral bone particularly mandibular bone resorption. Although several environmental factors influence bone loss, genetic contribution particularly estrogen receptor gene (ERG) polymorphisms was evidenced.

Objectives:

To detect the association between ERG polymorphisms and alveolar bone loss, and to determine the distribution of these polymorphisms in postmenopausal Malay women (PMW). Methods: Sixty four PMW (mean age 57.06±4.69) were recruited from Out Patient Dental Clinic, Hospital Universiti Sains Malaysia, Kelantan. Oral examinations were performed and panoramic radiographs were taken for these study subjects. The radiographs were measured for alveolar bone loss using the technique as described by Wical and Swoope (1974). Genotyping was done through the restriction cleavage of polymerase chain reaction-amplified genomic DNA with the two restriction enzymes, PvuII and XbaI. Estrogen receptor genotypes were represented as P or p (PvuII) and X or x (XbaI) with the lower case letters signifying the presence of the restriction site.

Results:

ANOVA showed no significant association between ERG polymorphisms and alveolar bone loss in PMW. High frequency of heterozygous allelic variants (53% for Pp and 86% for Xx) was observed.

Conclusion:

ERG polymorphisms may not be a genetic marker for alveolar bone loss in postmenopausal Malay women. This study supported by USM Short Term Grant, 301 PPSG 6131300.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

PARENTAL FACTORS AND CARIES STATUS AMONG INDIGENOUS SCHOOLCHILDREN

Author:

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¹University of Malaya, Kuala Lumpur, Malaysia, ²Dental Division, Health Department of Federal Territory Kuala Lumpur, Jalan Cenderasari, Kuala Lumpur, Malaysia

Objectives:

To assess the parental factors related to children's oral health and to determine the caries status among Orang Asli primary schoolchildren.

Methods:

A cross sectional pilot study was done among 52 Orang Asli primary schoolchildren aged 6 – 12 years old and their parents. A visual oral examination using DMFT index was conducted on all primary schoolchildren who attended the oral health screening at a community setting. An interview guided questionnaire was employed for the parents. Data collection was done at home by trained interviewer. Data was entered and analysed using SPSS Version 12.0.

Results:

Mean age of schoolchildren was 9.9 years old with 61.5% male. Mean DMFT was 0.8. Majority (71%) was caries free and needed no treatment. Mean age for fathers and mothers was 42.8 and 39.4 respectively. Two thirds (75%) of parents at least have primary education level. Most (90%) considered their children's oral health as important but never send them to visit dentist. Less than 50% of parents taught their children toothbrushing while 46% of schoolchildren practice daily tooth brushing. Majority (80%) practiced breast and bottle infant feeding. Only 15% practice bottle feeding alone. About 38% of their children bottle fed before sleep. Of these, only one third added sugar in the bottle. Most (73%) of them also did not snack in between meals.

Conclusion:

Parental oral health related factors appear to have a positive impact on the caries status of the Indigenous children. However, oral health promotive intervention needs to be reinforced to translate parents' perceived oral health importance into good oral health practice.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

SALIVARY INORGANIC COMPONENTS IN RELATION TO SOME CLINICAL VARIABLES

Author:

R.A.R. AWANG, Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia, and **R.A. JALIL**, University of Malaya

Objective:

to look at associations between salivary inorganic components (calcium and phosphate) and some clinical variables (plaque, gingival bleeding and DMFS scores).

Methods:

Assessments of plaque, gingival bleeding and DMFS scores were carried out on 30 school children (aged 14-16) and this were followed by the collection of both resting and stimulated whole saliva. Plaque was recorded as absent (code 0), visible with probing (code 1) and visible without probing (code 2) while bleeding was assessed according to Sidi and Ashle (1984) index. The flow rate of saliva was determined by calculating the volume of saliva collected/time taken to collect the sample. Calcium and phosphate analyses were carried out using color titration and spectrophotometer respectively.

Results:

When controlled for secretion rate, results of this study showed positive associations between calcium concentrations (0.50 ± 0.57 mmol/l) in resting whole saliva and visible plaque (6.20 ± 8.5) at $r=0.458$, $p<0.05$, plaque wet weight (0.01 ± 0.02 mg) at $r=0.445$, $p<0.05$, and bleeding on probing (6.73 ± 4.14) at $r=0.417$, $p<0.05$. Positive associations were seen between phosphate concentrations (0.21 ± 0.1 mg/ml) in resting whole saliva with visible plaque (6.20 ± 8.5) at $r=0.496$, $p<0.05$ as well as with bleeding on probing (6.73 ± 4.14) at $r=0.467$, $p<0.05$.

Conclusions:

The results of this investigation showed that some significant positive associations were seen between salivary concentration of calcium and phosphate in resting whole saliva and some clinical variables.

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

ORAL HEALTH STATUS AMONG INDIGENOUS PEOPLE IN KUALA LIPIS, MALAYSIA

Author:

N.H. MOHAMED, Z.Y.M. YUSOF, R. ABDUL-KADIR, and N.A. BAHARUDDIN, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To determine the oral health status of the indigenous people in Kuala Lipis, Malaysia.

Methods:

This is a descriptive cross-sectional study involving adults aged 15 and over. Three examiners underwent extra and intra-examiners calibration prior to the examination. All examinations were carried out based on WHO guidelines using standard instruments and procedures. Information collected focused on dental caries, periodontal diseases, level of edentulousness and presence of oral lesion.

Results:

118 out of 568 adults were examined (20.8%). Age ranged from 15 to 80 years. Less than half (45.8 %) was from Semai tribe and 54.2 % was from Bateq tribe. The prevalence of dental caries was found to be quite high with mean DMFT of 7.6 with mean decay (DT), missing (MT) and filled teeth (FT) were 3.5, 3.7 and 0.4 respectively. The number of adults with The Community Periodontal Index (CPI) scores 3 and 4 were 69.5% and 26.2% respectively. The prevalence of oral lesion was found to be low (9.3%). In terms of levels of edentulousness, 54.2 % of the sample had at least one tooth missing to fully edentulous with mean 3.7.

Conclusion:

This study showed that the caries experience, periodontal disease and level of edentulousness within the sample of indigenous people in Kuala Lipis were found to be high. It is recommended that effective oral health promotion to improve the oral health status of the indigenous peoples be implemented.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

A STUDY ON FLEXURE STRENGTH OF SEVERAL DENTAL COMPOSITES

Author:

W.B. LIM, Ministry of Health, Selangor, Malaysia, C.K. LAW, Ministry of Health, Banting, Malaysia, and M.I. ABU-HASSAN, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

This study was to evaluate the flexure strength of three composites [Spectrum TPH (Dentsply, UK); Filtek Z250 (3M Dental Products, USA) and Aelitefil (Bisco Company, USA)] and two amalgams [Permite C (SDI, Australia) and Silverfil (Dunia Perwira Sdn Bhd, Malaysia)] as the controls.

Methods:

15 specimens for each material were prepared with the size of 2 x 2 x 25mm. The specimens were immersed in the distilled water and incubated in incubator at 37°C for one week before test. The test conducted using the 3-point bend test method. ANOVA and Scheffé test were used for statistical analysis in this study.

Results:

There were no significant differences ($p < 0.05$) in flexural strength between Spectrum TPH and Aelitefil. However, both Spectrum TPH and Aelitefil are significantly ($p < 0.05$) stronger than Filtek Z250. All of the composites have a significant ($p < 0.05$) higher flexural strength than amalgams. Silverfil, a new product showed the lowest ($p < 0.05$) flexural strength among the materials.

Conclusions:

Spectrum TPH and Aelitefil were the strongest dental composites. Composites have better flexure strength than amalgam. This means that composite has sufficient strength in the posterior teeth restoration, as an alternative to amalgam. However, dental composite still need some improvements in other aspects. The newly manufactured amalgam, Silverfil showed its weakness and need further investigation for its mechanical properties.

The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

A STUDY ON FLEXURE STRENGTH OF SEVERAL DENTAL COMPOSITES

Author:

W.B. LIM, Ministry of Health, Selangor, Malaysia, C.K. LAW, Ministry of Health, Banting, Malaysia, and M.I. ABU-HASSAN, University of Malaya, Kuala Lumpur, Malaysia

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The Preliminary Program for Annual Scientific Meeting, 19th International Association for Dental Research-Southeast Asia Division and 13th Southeast Asia Association for Dental Education (September 3-6, 2004)

PERIODONTAL HEALTH STATUS OF THE ADULT INDIGENOUS PEOPLE

Author:

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Objectives:

To determine the periodontal health status of adult indigenous people in Kuala Lipis, Malaysia.

Methods:

A cross-sectional study was carried out at 6 identified indigenous villages. A total of 118 subjects participated in this study whereby 54 (45.8 %) subjects were from Semai's tribe and 64 (54.2 %) subjects were from Bateq's tribe. The age ranged from 15 to 80 years old. The periodontal status was determined using the Community Periodontal Index (CPI) and score 3 and 4 were used as severity indicator for periodontal disease.

Results:

The main finding was 12 (10.2%) subjects presented with all sextants with CPI score 3 but none (0%) of the subjects presented with CPI score 4. Interestingly, 82 (69.5 %) subjects presented with at least one sextant with CPI score 3 and 31 (26.3%) subjects presented with at least one sextant with CPI score 4.

Conclusion:

Periodontitis is a common oral health condition among the indigenous people in Kuala Lipis. Therefore, effective oral health promotion strategies need to be implemented to improve the oral health of the group.

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

SURVIVAL OF ORAL CANCER PATIENTS IN MALAYSIA- A MULTI-CENTRE AUDIT

Author:

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Objectives:

No prior oral cancer survival data exists among Malaysians. The objective of this study was to audit 1 year survival status.

Methods:

Multicentre data were collected for 156 oral cancer patients and was analyzed for its relation with disease stage, nodal status, tumor size and treatment modalities. Comparison was made between early and late stage presentation, positive versus negative nodes, tumor size and types of treatment modalities.

Results:

Mean age was 60.7±12.8 years old with 7.7% patients below the age of 40. Majority are females (59.6%) and of Indian ethnic origin (46.2%) followed by Indigenous (21.2%), Chinese (17.9%) and Malays (14.7%). Most common risk habit practiced was betel quid chewing (59.9%), smoking (36.1%) and alcohol consumption (35.2%). The most common site was buccal mucosa (36.2%), followed by tongue (33.8%), gingiva (21.5%), palate (4.6%) and floor of mouth (3.8%). Most patients came at stage IV (62.3%) followed by stage III and II (15.8%) and stage I (6.1%). Among those who presented at late stage, 41.6% survived 1 year after diagnosis while survival for those at early stage was 80% (p=0.001). Lower survival was found for those with positive node (43.3%) compared to those without node involvement (66.7%) (p=0.022). Lower survival was also found for those with tumor size >2cm (47.2%) compared to those with tumor size ≤2cm (100%) (p=0.007). Most common treatment used was surgery with post-operative radiotherapy (43.5%), followed by radiotherapy alone (20.9%) and surgery alone (17.4%). Among those who had surgery with post-operative radiotherapy, survival was only 54.1% for those who came at late stage compared to 75% for those who came at an early stage (p>0.05).

Conclusions:

Disease stage, nodal status and tumor size are independent predictors of 1 year survival for oral cancer patients in Malaysia. Grant: MOSTI, Malaysia, IRPA RMK8 Project no 06-02-030174 PR 0054/05-05

The Preliminary Program for 21st International Association for Dental Research - South East Asia Division : Annual Research Meeting

IMMUNOFLUORESCENCE STUDY IN ORAL LICHEN PLANUS AND ORAL LICHENOID REACTIONS

Author:

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Oral lichen planus (OLP) is an autoimmune disease of oral mucosa. Oral lichenoid reactions (OLR) are considered as a variant of OLP. They may be regarded as a disease by itself or as an exacerbation of an existing OLP, by the presence of medication or dental materials. They are indistinguishable, clinically and histologically.

Objectives:

To describe the fluorescence patterns in idiopathic OLP and OLR using direct immunofluorescence (DIF) and the fluorescence pattern of basal cells in idiopathic OLP and OLR using indirect immunofluorescence (IIF) technique. To investigate the relationship between OLR (drug related) and contact allergy to dental materials (epicutaneous patch testing) using DIF and IIF.

Methods:

28 subjects were involved. Oral biopsy were taken and bisected. One of the sections was processed for standard light microscopic examination and the other half was quick frozen in liquid nitrogen for DIF examination. 5 ml of venous blood were taken and subjected to centrifugation to separate the serum. The serum was used for IIF examination. 21 patients were sent for patch test to various components of dental materials.

Results:

19 patients diagnosed with OLP showed linear pattern of positive fluorescence to fibrinogen at the basement membrane zone with DIF. 6 out of 7 sections from OLR showed similar features as in idiopathic OLP. IIF showed negative result in all specimens of OLP and OLR. 2 patients were patch tested positive for nickel sulphate and 2 patients were positive for components of acrylic resin.

Conclusion:

DIF was positive in all idiopathic OLP and majority of OLR, but the fluorescence pattern show no difference. IIF was negative in all cases. Cutaneous patch test may aid in differentiating OLP and OLR, but further study with bigger sample size is needed. This study was supported by University of Malaya's grant (Vot F: F0201/2003D).

The Preliminary Program for International Association for Dental Research - 20th Annual Scientific Meeting of the Southeast Asia Division and Southeast Asia Association for Dental Education - 16th Annual Scientific Meeting (Sept. 1-4, 2005)

VALIDITY OF THE FACT-H&N AMONG ORAL CANCER PATIENTS IN MALAYSIA

Author:

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Background:

To date, the assessment of the impact of oral cancer and its related treatment on patients using a cross-culturally adapted health-related quality of life instrument has yet to be undertaken in Malaysia.

Objectives:

The aim of this study was to assess the cross-sectional construct validity of the Malay-translated and cross-culturally adapted FACT-H&N (v 4.0) questionnaire for Malaysian oral cancer patients.

Methods:

A cross-sectional study of adults newly diagnosed with oral cancer. HRQOL data were collected using the Malay-translated FACT-H&N (v 4.0), a global question and a supplementary set of eight questions (maq) obtained earlier in pilot work (cross-cultural adaptation process).

Results:

76 patients (61.8% female; 23.7% younger than 50) participated. Most (96.1%) had squamous cell carcinoma; Two-thirds were seen in stages III or IV. Patients' mean FACT summary and subscale scores were towards the higher end of the range at baseline. Equal proportions (36.8%) of participants rated their overall HRQOL as 'good' or 'average'; fewer than one-quarter as 'poor' and only 2 patients as 'very good'. FACT summary and subscale scores had moderate to good internal consistency. Subscale Cronbach alpha values were acceptable. Cross-sectional construct validity was noted between FACT summary scores, the head and neck subscale and the maq scores with 1) patients' self-rated HRQOL groups and 2) the extent of tumor. FACT summary scales correlated strongly with each other ($r > 0.75$).

Conclusion:

The Malay-translated and cross-culturally adapted FACT-H&N (v 4.0) demonstrated adequate cross-sectional construct validity and thus appear appropriate for further use among oral cancer patients in Malaysia.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

PERIODONTAL WIDTH AND STRUCTURE OF NATURAL DENTITION OPPOSING IMPLANT-BORNE BRIDGEWORK

Author:

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Objectives:

Dental implant research interest is nearly always about achieving successful osseointegration and optimal peri-implant soft tissue conditions. By comparison little is known about the effects of implant-supported superstructures on the opposing natural dentition. The periodontal membrane (PM) functions as a dynamic attachment apparatus and responds to occlusal forces by widening/narrowing its width and alterations in collagen fibre density/orientation. The aim here is to investigate the influence of implant-borne bridgework on PM structure.

Methods:

Test samples consisted of maxillary second premolar-second molar jaw segments from four healthy adult male monkeys (*Macaca fascicularis*) that had implant-supported 3-unit bridge placement in the second premolar-second molar regions of their mandibles – one side for immediate loading and the other side for delayed loading, in a split mouth design. Control samples also consisted of maxillary second premolar-second molar jaw segments from two monkeys but without fixed prosthesis placement in the opposing mandibles. After 3 months of functional loading, the animals from both test and control samples were sacrificed, and the premolar-molar regions of the maxilla were harvested and processed for histometric analysis. Apical and cervical PM widths were measured using an Image Analyzer.

Results:

No pathological changes in PM were observed in both test and control. Collagen fibre density/orientation was normal and inflammation was absent. No significant differences were found in PM width between test and control samples at both cervical and apical sites respectively.

Conclusions:

Findings suggest that implant-borne bridgework does not adversely affect the PM of the opposing natural dentition.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

PLASMA FIBRONECTIN IN SALIVA: POTENTIAL MARKER FOR MISCARRIAGE

Author:

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Objectives:

1) To evaluate the association between fibronectin in saliva of pregnant ladies who had miscarriages. 2) To determine the association of fibronectin in saliva and periodontal disease.

Methods:

25 pregnant ladies with history of miscarriage(s) were recruited as the test group and 16 pregnant ladies without any history of miscarriage served as control. All the subjects fulfilled a set of inclusion and exclusion criteria for this study. Periodontal status were also examined. Saliva was collected and the amount of fibronectins in the saliva samples was determined using an ELISA technique with commercially plasma fibronectin kit (Imuclone®). The results were analyzed with Mann Whitney Test.

Results:

- i) Statistically significant higher median of fibronectin level in the saliva samples of the test group (0.10 .ig/mL) compared to the control group (0.00 .ig/mL) (p-value =0.023).
- ii) There was higher fibronectin level in saliva samples of both test and control groups who had periodontal disease than those of healthy subjects in both groups, however the difference was only statistically significant among control group (p-value= 0.046).

Conclusion:

Fibronectin in saliva samples was positively correlated to history of miscarriage and therefore may be a potential marker for miscarriage. For subjects with periodontal disease, there were prevailing higher fibronectin levels compared to healthy subjects. However, further studies should be conducted to confirm these findings.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

SURFACE REPRODUCTION OF ELASTOMERIC MATERIALS: VISCOSITY AND GROOVE SHAPE EFFECTS

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Objective:

To evaluate the effect of viscosity and type of grooves on surface detail reproduction of elastomeric impression materials.

Methods:

Express putty/light-, Impregum medium- and heavy/light-bodied and Aquasil medium- and putty/light-bodied elastomeric impression materials were chosen for this study. Five impressions were made using a cylindrical aluminum reference block with U- and V- shaped grooves and to produce 35 master dies. Each master die was immersed in distilled water at 37⁰ C for 5 minutes prior to the impression making on moist surfaces. Surface topography of the dies and impressions were captured using Alicona Imaging System. The mean difference in depth between the master dies and its corresponding impressions were analysed using two-way ANOVA, $p=.01$.

Results:

The lowest mean difference in depth for U- and V-shaped grooves was obtained from the Express putty/light group. The highest mean difference in depth for U- and V-shaped grooves was obtained from Impregum medium, Aquasil medium, Impregum,, heavy/light and Impregum heavy/light groups respectively. Two-way ANOVA indicated that there was a significant difference in the effect of materials ($p < .01$) and grooves ($p < .01$).

Conclusion:

Express putty/light-bodied elastomeric material produced the best surface detail, and U-shaped groove showed better surface detail reproduction than V-shaped groove

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

NOTCH EXPRESSION IN AMYLOID-PRODUCING CALCIFYING EPITHELIAL ODONTOGENIC TUMOR

Author:

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Objectives:

Notch canonical pathway mediates diverse biological processes including cell fate decisions during odontogenesis. Dysregulation of Notch has been implicated in the tumorigenesis of some odontogenic neoplasms but its role in the calcifying epithelial odontogenic tumor (CEOT) remains unclarified. The aim here was to determine Notch expression pattern in CEOT and to speculate on its significance.

Method:

Receptors Notch1-4 and their ligands (Jagged1, Jagged2 and Delta1) were examined immunohistochemically in six CEOT cases, and their expression levels quantified according to the percentage of positive tumor cells, amyloid-like proteins and calcifications: (-), negative staining; (+), mild and focal positivity <25%; (++) , moderate and diffuse positivity 25-50%; (+++), strong and diffuse positivity >50%.

Results:

CEOT epithelium demonstrated variable expression levels for Notch1, 3, 4, Jagged1 and Delta1 suggesting positive Notch activity at tumor proliferation sites. Expression patterns were distinct with some overlap. Their localizations were largely membranous and/or cytoplasmic. Notch2 and Jagged2 were absent. Amyloid-like proteins strongly expressed Jagged1, moderately Notch1, 3 and Delta1, suggesting upregulation of these protein molecules at sites of amyloid synthesis. Notch2, 4 and Jagged2 were absent. Calcifications and Liesegang rings were Notch-negative implying that calcification process occurs independent of Notch signaling. Stromal components namely endothelial cells and fibroblasts showed positive expression for Notch1, 3 and Jagged1 but were mildly or nonreactive for the other members.

Conclusions:

Taken together, it is plausible that Notch receptors and their ligands may play differing roles in the acquisition of cell fates in CEOT. Jagged1-mediated Notch signaling most probably regulates amyloid synthesis.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

EFFECT OF DIFFERENT BLEACHING SYSTEMS ON ENAMEL SURFACE

Author:

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Objectives:

To evaluate the effects of tooth bleaching on enamel microhardness and surface roughness upon application of hydrogen peroxide activated by light (Beyond™) and laser (LaserSmile™) at day 2, day 7 and day 28.

Methods:

25 enamel slabs embedded in epoxy resin was prepared. The enamel surface was polished using 1200-grit silicon carbide paper. The specimens were then divided into three treatment groups; control, light-activated and laser-activated. Baseline data was collected for microhardness and surface roughness. For light-activated bleaching, after application of 35% hydrogen peroxide gel, the specimen surface was activated with light (Beyond™) for 10 minutes. Reapplication of gel is repeated for another cycle. For laser-activated (LaserSmile™) bleaching, 37% hydrogen peroxide was activated with laser; 8 cycles for 10 seconds each cycle. Vickers microhardness testing machine was used to determine changes in enamel microhardness. Surface roughness was evaluated using surface texture analyzer. Changes in enamel microhardness and surface roughness were evaluated on day 7 and 28 after the bleaching treatment for both intervals.

Results:

The effects of hydrogen peroxide bleaching on enamel surface microhardness were not statistically significant between the specimens groups of different time intervals except for light. Light- activated bleaching caused microhardness reduction. There were statistically significant differences in surface roughness in laser and light groups. Conclusion: Light-activated and laser-activated bleaching caused alterations in the enamel microhardness and surface roughness. Laser-activated bleaching is safe since it does not cause any statistically significant changes in enamel properties.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

TIME-KILL EFFECT OF MOUTHRINSES ON ORAL CANDIDA SPECIES

Author:

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Objective:

To assess the killing efficacy of selected mouthrinses toward *C. albicans* and *C. glabrata*.

Method:

Four chemical-based and three plant-based mouthrinses were tested, while nystatin was used as a positive control in this study. 5 ml of diluted mouthrinse (1:1) was inoculated with 100 μ l of *C. albicans* inoculum. Immediately (t_0) following thorough mixing, 20 μ l of the test suspension was aliquoted out and evenly spread onto SDA plates. This was done in triplicate. Similar procedure was repeated after 15 s (t_{15}) and at every 15 s intervals up to the 180th seconds (t_{180}). All the plates were then incubated at 37^o C for 24 hrs to allow for growth. The colony forming units which represent *C. albicans* growth were then enumerated and the time-kill curve was constructed. Similar procedure was carried out on *C. glabrata*. The shortest time interval that shows no colony or one discrete colony was used to indicate maximum efficacy of the mouthrinse.

Results:

Based on the time-kill curves produced, the four chemical-based mouthrinses showed efficient and similar pattern of killing activities on both *Candida* species. Total killing (100%) of *C. glabrata* was recorded after 60 s exposure to chlorhexidine (CHX) and hexetidine (HEX)-containing mouthrinses. With respect to the three plant-based mouthrinses, much lesser degree of killing efficiency was observed on both *Candida* species.

Conclusion:

Among the four chemical-based mouthrinses, the efficacy of CHX and HEX in killing both *Candida* species was much higher compared to cetylpyridinium and the combination of CHX-cetylpyridinium.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

TENSILE BOND STRENGTH OF CERAMIC COPING LUTED TO COMPOSITE CORE

Author:

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Objective:

The objective of this study was to evaluate the tensile bond strength of Vita In-Ceram® Zirconia coping luted to two different composite core materials using different luting media.

Method:

120 ceramic specimens (Vita In-Ceram®) were fabricated following the manufacturer's instructions. 120 composite specimens were prepared from hybrid composite (Spectrum®TPH®3)(n=60) and flowable composite (Composan Core DC)(n=60). Four types of luting media were used; zinc phosphate cement (Elite), glass ionomer cement (Fuji I), resin cements (Panavia F and Calibra). The ceramic discs were divided into eight groups (n=15 for each). The specimens were stored for 24 hour in distilled water at 37°C prior to tensile bond strength testing. The data for each group were analysed using the Kruskal-Wallis test followed by multiple pair wise comparison using Mann-Whitney rank sum test for independent samples. Significance levels were adjusted with the Bonferonni correction for multiple testing. The fracture interfaces on each sample were examined in a stereomicroscope to classify the mode of failure.

Results:

No significant differences were found between composite core build up materials ($p>0.05$). There was a significant difference between different luting materials. The mode of failure for most specimens of groups appeared cohesive failure.

Conclusion:

Vita In-Ceram® Zirconia ceramic coping when cemented to composite core using Calibra® gave high value of tensile strength. The different composite core materials used in this study have no significant effect on tensile bond strength, however, according to mean rank, Composan Core DC showed a higher value than Spectrum®TPH®3.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

EFFECT OF *P. BETLE* ON CELL-SURFACE HYDROPHOBICITY OF ORAL CANDIDA

Author:

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Introduction: Cell surface hydrophobicity (CSH) is a key attribute of virulence among infectious microorganisms. An understanding of this property would help to explain the high colonisation affinity of *Candida* on denture materials.

Objectives:

To determine the CSH of seven strains of oral *Candida*. The influence of aqueous *P. betle* extract on the CSH was also assessed.

Methods:

Seven *Candida* ATCC strains were used and hexadecane represented the hydrophobic compound in the experiment. Following rigorous agitation of each candidal suspension with hexadecane, the optical absorbance (OD) of each suspension was read. The percentage of adsorption of each strain to hexadecane was then calculated. To assess the effect of *P. betle* extract on the CSH, the *Candida* cells were first treated with extract at concentrations of 0-15mg/ml. 0.12% w/v chlorhexidine (CHX)-containing mouthrinse and sterile distilled water were used as positive and negative controls, respectively.

Results:

C. krusei, *C. parapsilosis* and *C. tropicalis* showed the highest adsorption capacity to hexadecane of about 40% while the others were within the range of 12-17%. The CSH of all *Candida* strains were significantly reduced following treatment with the extract ($p < 0.05$). At 2mg/ml, *P. betle* was able to reduce the CSH of *C. lusitaniae* (94.09%), *C. parapsilosis* (91.60%), *C. albicans* (78.16%), *C. dubliniensis* (73.33%), *C. krusei* (35.66%), *C. tropicalis* (32.36%) and *C. glabrata* (24.43%).

Conclusion:

The aqueous extract of *P. betle* tended to reduce the hydrophobic cell-surfaces of all the *Candida* tested. This suggested its potential to be used in candidal control especially for denture wearers.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

THERMO-MECHANICAL STRESS IN MULTILAYERED DENTAL POST DUE TO TEMPERATURE GRADIENT

Author:

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Objective:

To analyse thermo-mechanical stress in endodontically treated teeth restored with Multilayered Structured Dental Posts (MSDPs) under cold and hot conditions using Finite Element Analysis (FEM).

Methods:

Three MSDPs of multilayer design of xTi-yHA composition added to a zirconia layer (model A), an alumina layer (model B) and a titanium layer (model C) were compared with zirconia (model D) and titanium (model E) posts. The fractions of Ti and HA was varied gradually. Changes in temperature of an endodontically restored tooth model were calculated as a result of hot and cold response. The resulting thermo-mechanical stresses were analysed and compared using FEM in models A, B, C, D and E.

Results:

It was noted that Models A, B and C returned to near body temperature better than that Models of D and E. There was no evident difference in all MSDPs models. The smallest Von Mises thermal stresses were observed in MSDPs (models A, B and C) compared to models D and E. There were no also differences in Von Mises thermal stresses for all MSDPs. The magnitude of interface of stresses in models D and E with the surrounding tooth structures were greater than those in MSDPs especially in area close to middle third of the dental posts. The peak stress by thermal irritant for models D and E are approximately three times higher than models A, B and C.

Conclusion:

The findings of this study showed that pure zirconia and titanium posts produced greater thermal stresses than MSDPs.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

INHERENT DIFFERENTIATION POTENTIAL OF STEM CELLS FROM HUMAN DENTAL ORIGIN

Author:

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Introduction:

The success of cell replacement therapy depends on the ability of stem cells to stimulate endogenous pool of organ resident stem cells and generating adequate number of cells for therapy. Therefore, understanding the gene expression profile which indicating their lineage specific proclivity is fundamental to the development of successful cell-based therapies.

Objectives:

In this investigation, we compared the characteristic of stem cells isolated from deciduous (SCD) and permanent teeth (DPSCs) to elucidate their inherent proliferation and differentiation potential. Materials and methods: We compared proliferation rate, gene expression profile and lineage specific propensity of stem cells derived from SCD and DPSCs over five passages.

Results:

The proliferation rate of SCD was higher (cell number (cells/ml) 25×10^6 ; percent CFUs: 151.67 ± 10.5 ; percent cells in S/G2 phase: 12.4 ± 1.48 ; $p < 0.05$) than DPSCs (cell number (cells/ml) 21×10^6 ; percent CFUs: 133 ± 17.62 ; percent cells in S/G2 phase: 10.4 ± 1.18). It was observed that fold expression of several pluripotent markers such as OCT4, SOX2, NANOG and REX1 were higher (> 2) in SCD as compared to DPSCs ($p < 0.05$). However, DPSCs showed higher expression of neuro-ectodermal markers PAX6, GBX2, NESTIN (fold expression > 100). Similarly, higher neurospheres formation and neuronal marker expression (NF, GFAP) were found in the differentiated DPSCs into neuron like cells as compared to SCD.

Conclusion:

This study thus demonstrates that both SCD and DPSCs exhibit specific gene expression profile with clear-cut inclination of DPSCs towards neuronal lineage.

The Preliminary Program for 24th IADR-SEA Division Annual Scientific Meeting (September 19-21, 2010)

MICROVESSEL VOLUME IN NORMAL AND DYSPLASTIC ORAL EPITHELIUM

Author:

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Objectives:

To assess and compare the microvessel distribution between normal and dysplastic oral epithelium.

Methods:

Seventy(20 mild epithelial dysplasia /ED, 20 moderate ED, 20 severe ED, 10 normal oral mucosa) cases were retrieved from the archives of the Department of Oral Pathology, Oral Medicine & Periodontology, Faculty of Dentistry, University Malaya, and Institute for Medical Research, Kuala Lumpur, Malaysia. H&E and immunohistochemical staining with three vascular markers (CD31, CD34 and CD105)were performed. The grading of ED was in accordance with WHO recommendations. Angiogenic assessment was carried out blind using an image analyser. For microvessel volume(MVV) score, the average of four areas with the highest vessel density was obtained.

Results:

Mean MVV score for each marker shows a positive corelation with the grading of ED.

Conclusion:

Current findings show that anigogenesis is upregulated in dysplastic oral epithelium compared with normal mucosa. (Study is supported by Vote F Grant F0209/2003A)

11 March 2004 Hawaii Convention Center Exhibit Hall 1-2

ABUTMENT ANGULATION AFFECT ON STRESSES IN BONE. 3D FE ANALYSIS

Author:

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Objectives:

The aim of this study is to investigate the effect of different implant abutment angulations (0° , 15° , 30° , 37.5°) on the stress level and distribution in the bone around an implant-supported mandibular second premolar crown using 3-dimensional finite element (FE) analysis.

Methods:

A 3-D FE model of a dental implant (Ankylos; Dentsply Friadent, Germany) placed at the region of mandibular second premolar and restored with an all-ceramic crown was modeled using FE software (Pro/Engineer, Wildfire 2.0 parametric technology Corporation). The bony segment was modeled to simulate different inclinations relevant to clinical cases. The implants were placed along the long axis of the bone. Four types of standard abutments were modeled to receive the crown used in each case: (1) straight i.e. 0° (2) angulated 15° (3) angulated 30° (4) angulated 37.5° (lingually angulated abutments). Occlusal load of 150N was applied axially to the buccal cusp and distal fossa respectively to simulate occlusal loading during function. The ANSYS version 11.0 (ANSYS/Workbench, Ansys Inc, USA) was used to provide the loading simulation and stress profile prediction.

Result:

The result demonstrated that the maximum equivalent Von Mises stress in the model with straight (0°), 15° , 30° and 37.5° abutments were 26.4 MPa, 50.2 MPa, 64.3 MPa and 70 MPa respectively. High stresses were seen to concentrate at the cortical bone around the implant collar. A more homogenous stress distribution in the bone was seen along the entire implant fixture.

Conclusion:

Within the limitations of the present study, it is concluded that high level of stress is concentrated in the cortical bone surrounding the implant collar and it is directly proportional to the abutment angulation; theoretically, this stress has the potential to resorb the bone at this area and jeopardize the longevity of the implant.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

INVESTIGATING EXAMINER CONSISTENCY IN CRITERION-BASED ASSESSMENT USING RASCH MEASUREMENT

Author:

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In the implementation of criterion-based assessment some disparities in the interpretation of the assessment criteria have been observed. Therefore it is essential that a standardization exercise be carried out to ensure equitable and fair assessment.

Objectives:

The purpose of the study was to evaluate inter-examiner variability and examiners' internal consistency in applying a criterion-based assessment.

Method:

The subjects consisted of 9 full-time staff of the Department of Conservative Dentistry, University of Malaya, 4 part-time staff and 2 postgraduate students. One buccally-approached and one palatally-approached Class III cavity preparation were assessed according to a set of criteria developed by the department. Both preparations were cut by undergraduates in their preclinical year of study. Examiners rated each cavity on a 5-point scale (1=Redo, 2=Modification required, 3=Pass with minor mistakes, 4=Pass, and 5=Good). Ratings were analyzed based on the Many-facet Rasch model using its computer application, Facets, version 3.48.0.

Results:

Varying levels of examiner severity were found ranging from -1.99 logits to 0.18 logit. However, the majority of the examiners fall between -1.04 logits and -0.31 logit. The percentage of exact agreement was 45.5%. Several examiners were found to be inconsistent in their ratings as indicated by the Infit and Outfit mean-square statistics. Results also revealed range restrictions amongst some examiners. With respect to the assessment criteria, some were misfitting; these include (1) shape of cavity outline, (2) bevel width, (3) bevel thickness, (4) preservation of contact point and (5) placement of labial wall. On the other hand, several criteria demonstrated high agreement amongst examiners. These were (1) 90° cavo-surface angle, (2) rounded internal line angle, and (3) contour of axial wall.

Conclusions:

This study has highlighted the need for standardization of assessment criteria interpretation and better staff training in the assessment of preclinical students' operative skills.

Back to the Education Research Program

Back to the IADR General Session & Exhibition (June 28 – July 1, 2006)

DENTAL STUDENTS' PERCEPTION TOWARDS EFFECTIVE CLINICAL FEEDBACK AND ASSESSMENT

Author:

N.H. ABU-KASIM, University of Malaya, Kuala Lumpur, Malaysia, and N.L. ABU-KASSIM, International Islamic University Malaysia, Kuala Lumpur, Malaysia

Supervised practice in the dental clinic is one of the teaching tools in preparing a good dental practitioner. Teachers who are efficient in helping students learn in these settings improve this process. The ability to impart good feedback and carry out proper assessment **is an important measure of effectiveness.**

Objective:

The purpose of this study was to investigate the perception of students from the Faculty of Dentistry, University of Malaya towards effective clinical feedback and assessment from the staff of the Dept. of Conservative Dentistry.

Method:

A 4-point Likert-type scale questionnaire was formulated according to Myers, 1977 ([J.Dent.Edu](#) 41:68-76). Aspects of clinical feedback and assessment in the questionnaire include:- 1) the ability to be critical in assessing students' work, 2) the usage of criterion-based assessment and 3) the manner in which feedback are given to students. One hundred and sixty dental students from Year IV and V participated in this survey.

Results:

Generally, student responses showed that assessment and clinical feedback were carried out by staff. The data were subjected to two statistical procedures; exploratory factor analysis and Rasch rating scale analysis. Factor analysis indicated that all 3 constructs were clearly measured by the items in the questionnaire. Rasch rating scale analysis revealed logit values of -0.78 and -0.18 for the usage of criterion-based assessment when assessing students' clinical work. The highest logit value of 0.45, 0.37 and 0.34 were for the third construct; the students would like feedback be given privately and with a view to helping them improve their clinical performance. Conclusion: Students place great emphasis on the manner feedback is given and assessment is conducted of their clinical performance.

Back to the Education Research Program

Back to the IADR/AADR/CADR 82nd General Session (March 10-13, 2004)

INNOVATIVE DIAGNOSTIC TOOLS FOR EARLY ORAL CANCER AND PMEL DETECTION

Author:

R. SARAVANAN, University of Malaya, Kuala Lumpur, Malaysia, and C.H. SIAR, University of Malaya, Kuala Lumpur, Malaysia

Advancements in cancer research have led to the innovation of contemporary diagnostic tools for early oral cancer detection. Vizilite® and glowsticks based on the principle of 'chemiluminescence' and Light Emitting Diodes (LED) are the latest diagnostic tools available for this purpose.

Objectives:

To evaluate the potential value of chemiluminescence (Vizilite® and glowsticks) and LED as tools for the early detection of oral cancer, dysplasia and potentially malignant epithelial lesions (PMEL). The efficacy of these tools was assessed in terms of sensitivity, specificity and accuracy.

Methods:

A sample of 67 high-risk individuals aged 35 years and above were selected. Their inclusion criteria were history of habits including smoking, alcohol consumption or betel quid chewing, with presence of primary squamous cell carcinomas (SCC), previously treated SCC or PMEL. The study was conducted in two phases. During the first phase of the study, Vizilite® was assessed on 40 subjects. In the second phase, glowsticks and LED were assessed on 27 subjects. Biopsies were performed on identified lesions in 37 subjects. Another 14 subjects had no lesions. In the remaining 16 subjects, a biopsy was not performed due to subject's ill-health. The biopsy findings were correlated with the clinical observations.

Results:

The sensitivity was 100% for all three diagnostic tools whereas the specificity was higher for glowsticks and LED (90%) than for Vizilite® (85.7%). The accuracy was marginally higher for Vizilite® (96.8%) compared to the other two (95%).

Conclusions:

Chemiluminescence and LED are effective in the early detection of oral cancer, dysplasia and PMEL. Glowsticks and LED may prove to be cheap, safe and non-invasive innovative tools for screening high-risk individuals in clinics, health centres and remote areas devoid of modern healthcare facilities. (This study was supported by the University of Malaya, Vote F Grant F0105/2002D)

Thursday, 11 March 2004 Hawaii Convention Center Exhibit Hall 1-2
IADR/AADR/CADR 82nd General Session (March 10-13, 2004)

AN INVESTIGATION OF PERI-IMPLANT TISSUE STATUS OF DENTAL IMPLANTS

Author:

N. YUNUS, University of Malaya, Kuala Lumpur, Malaysia, and T.B. TAIYEB-ALI, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To compare periimplant tissue status at the time of prosthesis placement and subsequent intervals around implants supporting fixed and removable prostheses.

Methods:

One year longitudinal study was conducted on implant patients treated with various prostheses; implant-retained overdentures, implant-supported bridges and single crowns. There were 47 implants (Mark II, Branemark system, Nobel Biocare) placed in 12 patients (5 in the maxilla, 9 in the mandible). 8 arches were treated with fixed and 6 with removable prostheses. Baseline measurements were obtained during prosthesis insertion and follow-up examinations were at 3, 6 and 12 months intervals. Evaluations of plaque scores (PS), bleeding on probing scores (BOP), periodontal pocket depths (PPD), and recession as well as radiographs were conducted. Bone changes were determined from the radiograph by one examiner using predetermined fixed reference points. Data was analyzed using SPSS 11.0.

Results:

Soft tissue changes were higher at 3 months interval. Statistically significant differences in PS ($p<0.01$) and recession ($p<0.05$) around implants at all time intervals were noted, although BOP and PPD showed no significant differences. Comparisons around implants in the upper and lower arches indicated that the mean PS presented significant differences ($p<0.01$), while that of implants supporting fixed and removable prostheses showed PS and recession were significantly different ($p<0.001$ and $p<0.05$) but PPD approached significant difference ($p=0.05$). Hard tissue evaluation at baseline, 6 months and 12 months indicated increasing bone loss over the 12 months interval, which however was not significant at all time intervals. Bone loss was however significantly greater at implants supporting removable prostheses ($p<0.001$) and in the maxilla ($p<0.001$).

Conclusions:

PS and recession at the implant sites showed significant differences during the one year evaluation. Alveolar bone resorption around implants in the maxilla and supporting removable prostheses was significantly higher at all time intervals (Vote F Funding, University Malaya).

Saturday, 12 March 2005 Baltimore Convention Center 324-325

MMP-1, INTEGRIN BETA-4, CLINICOPATHOLOGY AND NECK METASTASES IN ORAL CANCER

Author:

A.T. CHOW¹, G.S. LIM¹, A. SALEH², and R.B. ZAIN³, ¹Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²Cancer Research Initiatives Foundation (CARIF), Selangor, Malaysia, ³Oral Cancer Research & Coordinating Centre (OCRCC), University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To determine the expressions of Matrix Metalloprotein-1 (MMP-1) and Integrin Beta-4 (ITG β 4) in oral cancer (OC) and to correlate these expressions and selected histopathologic parameters with the occurrence of cervical lymph node metastases.

Methods:

Thirty-seven OC samples of patients with a mean age of 61.16 years (S.D=12.318) were included in this study. Sociodemographic characteristics of the cases were obtained from the Oral Cancer Research and Coordinating Centre's database. Histopathologic parameters namely grade of differentiation (GD), tumour depth (TD), tumour greatest dimension (pT), pattern of invasion (PI), lymphoplasmacytic infiltration (LI) and eosinophils infiltration (EI) were evaluated from the Haematoxylin and Eosin (H&E) stained sections. The expressions of MMP-1 and ITG β 4 were evaluated using immunohistochemical techniques and categorized into 1+ when $\leq 28\%$ (MMP-1) or $\leq 9\%$ (ITG β 4) of tumor cells was stained or 2+ when $>28\%$ (MMP-1) or $>9\%$ (ITG β 4) of tumor cells was stained. Correlations between the MMP-1, ITG β 4 with neck node metastases were analysed using the Chi Square Test.

Results:

The expression of MMP-1 in OC was 100%, while expression of ITG β 4 was 92.6%. A higher percentage of lymph node metastasis was observed among those with non-cohesive PI (58.6%); those with EI within the stroma surrounding the epithelial tumour cells (58.0%); those with TD >4 mm (52.9%) and those with 2+ expression of MMP-1 (61.5%). There were no marked differences in percentage of lymph node metastases for subcategories of GD, pT, LI and ITG β 4 expression. All the observations were not statistically significant.

Conclusions:

There appeared to be a higher percentage of lymph node metastases in cases exhibiting non-cohesive PI, absence of EI, TD >4 mm and 2+ expression of MMP-1.

Acknowledgements:

This study was funded by the Oral Cancer Research and Coordinating Centre (OCRCC), Faculty of Dentistry, University of Malaya - grant no. TA010/2007A and supporters of Cancer Research Initiatives Foundation (CARIF).

Friday, October 10, 2008

NUMERICAL ABNORMALITIES OF CHROMOSOME 17 IN ORAL SQUAMOUS CELL CARCINOMA

Author:

G.H. KHOR, University of Malaysia, Wilayah Persekutuan, Malaysia, and C.H. SIAR, University of Malaysia, Wilayah Persekutuan, Malaysia

Objective:

To detect numerical aberrations of chromosome 17 in oral squamous cell carcinoma (SCC).

Materials and Methods:

Twenty oral SCC cases as test sample, and five cases of buccal mucosa as normal controls, were obtained from the archives of the Department of Oral Pathology, Oral Medicine & Periodontology, Faculty of Dentistry, University of Malaya, and the Unit of Stomatology, Institute for Medical Research, Kuala Lumpur, Malaysia. All test cases were representative specimens of the free resection margins. H&E staining and Fluorescent in-situ hybridization (FISH) using a specific probe for pericentrometric region of chromosome 17 were performed. The number of hybridization signals was determined by observing 200 nuclei under a fluorescent microscope. Descriptive statistics was performed to analyze the data obtained. Statistical significance was at $p < 0.05$.

Results:

In the control cases, $67.8 \pm 11.0\%$ cells had two hybridized signals in their nuclei indicative of disomy, whereas cells with more than two signals were rare ($3.2 \pm 1.8\%$). For the test sample, the mean FISH signals were $43.7 \pm 13.0\%$ for monosomy 17, $40.9 \pm 11.1\%$ for disomy 17 and $15.3 \pm 9.03\%$ for polysomy 17. Within the test group, only the cells with polysomy 17 and disomy 17 were significantly different from the controls ($p < 0.05$). Our study demonstrated that numerical aberration of chromosome 17 is frequent in oral SCC (17/20 cases, 85%). Only 2 cases showed monosomy and one case was a disomy.

Conclusion:

This finding suggests that numerical chromosome 17 abnormality is involved in the process of carcinogenesis and development of oral SCC as observed by FISH. Therefore, FISH can be used as a prognostic marker for evaluating neoplastic activity at the surgical margin of oral SCC. This study was supported by the University of Malaya, Vote F Grant F00210/2003A.

10:15 AM-11:30 AM, Friday, 12 March 2004 Hawaii Convention Center Exhibit Hall 1-2

EFFECT OF GLASS ADDITION ON PROPERTIES OF HYDROXYAPATITE

Author:

Y.R. MUSLIM TANDJUNG, University Of Malaya, Kuala Lumpur, Malaysia, J. KNOWLES, University College London, United Kingdom, and J. HOWLETT, University College London - Eastman Dental Institute, England, Uk

Hydroxyapatite (HA) has been increasingly used in biomedical applications due to its biocompatibility with living tissues. However, its use is limited to low load bearing areas due to the poor mechanical properties compared to bone.

Objectives:

The aim of this project is to improve the mechanical properties of synthetic HA by optimising the processing method and also by using a phosphate based glass as a sintering aid to develop Glass Reinforced Hydroxyapatite (GR-HA).

Methods:

A phosphate based glass containing CaO, P₂O₅ and CaF₂ was incorporated into HA at 2.5wt% and 5wt% additions during the milling process prior to sintering at 1300°C. The materials were characterised in relation to density, porosity, phase analysis and flexural strength. The flexural strength data were analysed using Weibull statistics.

Results:

The flexural strength mean values for GR-HA ranged from 80MPa to 110MPa. Pure HA exhibited a much lower flexural strength mean value ranging from 66MPa to 79MPa. The improved mechanical properties were associated with the occurrence of residual stress as a result of decomposition of HA to β -TCP and in 5wt% GR-HA to β -TCP. The Weibull analysis suggested that HA and GR-HAs differed significantly in relation to their strength.

Conclusions:

Only 5wt% GR-HA exhibited a statistical significant and relatively high weibull modulus value, suggesting a high dependability and low probability of failure of material in vivo. Only pure HA exhibited a significant difference in the mode of failure.

Saturday, 1 July 2006 Brisbane Convention & Exhibition Centre M1

CYCLIN D1 AND P27 EXPRESSIONS IN ORAL SQUAMOUS CELL CARCINOMA(OSCC)

Author:

N.N. BASRI, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, and R.B. ZAIN, Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To analyse the expression of cyclin D1 and p27 in OSCC of buccal and alveolar mucosa and to correlate the expressions of cyclin D1 and p27 with selected clinicopathological parameters namely habit, Broders' grading, tumour greatest dimension, tumour depth, pattern of invasion, lymph node status and pathological tumour stage.

Methods:

The expression of cyclin D1 and p27 were examined immunohistochemically on formalin-fixed, paraffin-embedded tissue sections from surgical specimens of 31 patients who had been diagnosed with OSCC of buccal and alveolar mucosa. Immunoreactivity evaluation of cyclin D1 and p27 was performed using the image analyzer (Image Pro MDA-Media Cybernetics). Statistical correlations between cyclin D1 or p27 expression and selected clinicopathological parameters of OSCC were analyzed using Fisher's exact test.

Results:

Cyclin D1 positivity and reduced expression of p27 was detected in 74% and 87% of the cases respectively. Overexpression of cyclin D1 were statistically significant with larger tumour greatest dimension (T3 and T4) ($p = 0.012$), tumour depth > 8 mm ($p = 0.043$), non cohesive pattern of invasion ($p = 0.001$) and advanced pathological tumour stage (III-IV) ($p = 0.003$). Reduced p27 expression was significantly associated with non cohesive pattern of invasion ($p = 0.043$).

Conclusion:

There was a significant correlation between overexpression of cyclin D1 and underexpression of p27 with some clinicopathological parameters which are known independent prognostic indicators. Thus, these results suggests that overexpression of cyclin D1 and underexpression of p27 may be useful as prognostic markers for OSCC of buccal and alveolar mucosa.

Friday, October 10, 2008

TISSUE REACTIONS TO SYNTHESIZED BIODEGRADABLE POLYMERS IN HAMSTER SKIN

Author:

C.H. SIAR¹, C.B. LIAN¹, S.T. ONG², S.N. GAN¹, C. CHAN¹, and I. TAN¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²University of Malaya, Kuala Lumpur

Poly-L-Lactic acids (PLA) are biodegradable polymers commercially available as screws and plates for internal fixation of mandibular fractures. Polyhydroalkanoates (PHA) are carbon and energy reserve material synthesized by bacteria and viewed as natural products with potential uses in biomedical fields either as scaffolding materials or barriers in tissue engineering.

Objectives:

To examine and compare the tissue response of PLA and PHA within the subcutaneous environment. Methods: Twenty adult male Syrian golden hamsters (*Mesocricetus auratus*) of both sexes, average age 1 month and weighing 100 gm, were used. 2 mm discs of PLA and PHA were implanted in the dermis of the animal back, and the wounds allowed to heal by primary intention. The total sample size for each polymer was 20. The entire experimental period was 20 weeks. An animal was sacrificed at a weekly interval, and the skin containing the polymers was excised and submitted for histopathological evaluation blind.

Results:

At the early implantation phase (week 1), a mixed acute and chronic inflammatory cell reaction was present in the subcutaneous connective tissues at the implant site for both types of polymers. Between weeks 2 and 5 a fibroblastic reaction was seen around an intact PHA whereas dense scar-like tissues had encased PLA which demonstrated progressive fragmentation and degradation. By week 6, there was no evidence of PLA in the subcutaneous tissues whilst PHA remained intact. In addition, 2 animals showed osteoid formation adjacent to the intact PHA. Late implantation phase (week 20) was marked by fibrosis, encapsulation and evidence of foreign body giant cell granuloma proximal to PHA.

Conclusions:

Differences in polymer composition underlie the different tissue reactions and dissolution characteristics of these materials. (This study was supported by the IRPA Vote 06-02-030169)

Saturday, 13 March 2004 Hawaii Convention Center Exhibit Hall 1-2

EXPRESSION OF KI-67 AND MMP-1 IN OSCC, OLP AND FEH

Author:

L.S. NIGEL-PONG¹, T.Y. LU¹, Z. MOHAMAD-ZAINI¹, S.C. CHEONG², and R.B. ZAIN³, ¹Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²Cancer Research Initiatives Foundation (CARIF), Subang Jaya, Malaysia, ³Oral Cancer Research & Coordinating Centre (OCRCC), University of Malaya, Kuala Lumpur, Malaysia

Objective:

To investigate the association between a proliferative marker(Ki-67) and an invasive marker(MMP-1) in oral squamous cell carcinoma(OSCC), oral lichen planus(OLP) and surface epithelium of fibroepithelial hyperplasia(FEH).

Methods:

The samples consisted of formalin-fixed paraffin embedded tissues from 47 subjects obtained from the archives of the Oral Pathology Diagnostic laboratory and the Oral Cancer Research and Coordinating Centre(OCRCC)(14 OSCC, 23 OLP and 10 FEH). Tissue specimens were cut out from paraffin blocks and put together using the Tissue Macroarray(TMaa) method to form a separate tissue specimen blocks prior to the staining with the proliferative(Ki-67) and the invasive(MMP-1) markers. The stained sections were evaluated separately and scored for the percentage of expression of Ki-67 and MMP-1 using image analyzer(Image Pro MDA-Media Cybernetics) version 6.1. The statistical analysis used was Fisher Exact from the STATA statistical software.

Results:

Positive brown nuclear staining of Ki-67 was observed in tumour/epithelial cells mostly at the periphery/basal layer of the tumor islands for OSCC, the basal cell layer of surface epithelium for OLP and negative nuclear epithelial staining of surface epithelium for FEH. Nuclear immunostaining reaction for MMP-1 was also seen at the periphery of the tumor islands with almost negative staining reaction of surface epithelial cells for OLP and FEH. Ki-67 stained positively in 78.6%, 43.5% and 30.0% while MMP-1 was expressed positively in 85.7%, 34.8% and 40.0% of tumour cells for the OSCC, surface epithelial cells of OLP and FEH respectively. There was a significant association between the percentage expression of Ki-67($p=0.037$) and MMP-1($p=0.008$) with OSCC, OLP and FEH.

Conclusions:

The pattern of expression of Ki-67, a proliferative marker and MMP-1, an invasive marker were clearly differentiated between the OSCC, OLP and surface epithelium of FEH. Thus, using this as predictive markers for malignant transformation is possibility.

(Funding: OCRCC-UM grant no.TA010/2007A and supporters of CARIF)

Seq #10 - Poster Presentation

11:00 AM-12:30 PM, Friday, October 10, 2008

COMPARATIVE STUDY RESIN CEMENTS SHEAR BOND STRENGTH WITH COMPOSITE INLAYS

Author:

W.A. ANNUAR, University Of Malaya, Kuala Lumpur, Malaysia, and H. ABDULLAH, University Of Malaya, Kuala Lumpur, Malaysia

Objective:

The aim of this study is to compare two resin luting cements (Rely XTM ARC, 3M and Compolute™, ESPE) on their shear bond strength with one composite inlay system (Filtek™ Z250 Universal Restorative Materials, 3M).

Methods:

In shear bond strength test, fifteen composite discs were cemented with resin luting cement Rely XTM ARC and the rest with Compolute™ on a flat occlusal surface of freshly exposed dentine. The specimens were kept at 37°C for 10 days before thermocycled (500 times between 15°C and 45°C with dwell time 15 seconds). Testing was carried out with the Instron Universal Testing Machine at a crosshead speed of 1mm per minute.

Result:

The shear bond strength result shows that, the mean shear bond strength for Rely XTM ARC (3M) is 18.006MPa with S.D \pm 4.971, n= 15 whereby Compolute™ (3M ESPE) is 19.438 MPa S.D \pm 1.947, n=15. The independent t-test gives a p-value of 0.308, which is more than 0.05 (p>0.05) therefore there is no significant difference of shear bond strength between Rely XTM ARC and Compolute™. Non-parametric test (Mann Whitney Test) also has been used on means rank for Rely XTM ARC and Compolute™. The p-value = 0.098, which is more than 0.05 (p>0.05) therefore there is no significant difference in shear bond strength between Rely XTM ARC and Compolute™.

Conclusion:

There is no significant difference in shear bond strength between both types of resin luting cements (Rely XTM ARC and Compolute™).

Seq #70 - Adhesion I

10:15 AM-11:30 AM, Thursday, 11 March 2004 Hawaii Convention Center Exhibit Hall 1-2

GLUTATHIONE-S-TRANSFERASE – MU1(GSTM1) POLYMORPHISM AND RISK HABITS IN MALAYSIAN PRIBUMI POPULATION

Author:

I.S.M. ALJUNID MERICAN, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, R. ABDUL KADIR, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia, and R.B. ZAIN, Oral Cancer Research Coordinating Centre (OCRCC), University of Malaya, Kuala Lumpur, Malaysia

Introduction:

Smoking, alcohol consumption and betel quid chewing have long been identified as primary risk factors for oral cancers. Other than these lifestyle habits, polymorphic genes such as GSTM1 has also been widely studied. However, there are yet no reports with regards the prevalence of these habits and the GSTM1 null genotype in the indigenous group namely the Orang Asli of Peninsula Malaysia. Information on the prevalence of oral mucosal lesion/conditions is also lacking.

Objective:

To determine the prevalence of risks habits, GSTM1 null genotype and oral mucosal lesions in Orang Asli populations and to investigate the correlation of the risk habits and GSTM1 null genotype.

Methods:

Sociodemographic information was collected from 242 Orang Asli subjects via structured interview. Of the sample, 146 subjects had their mouth examined. Cells of buccal mucosa were collected using cytobrush and DNAs were extracted from 98 subjects. GSTM1 polymorphism was analysed using multiplex PCR.

Results:

The prevalence of smoking in this population was 55.0%, alcohol drinking 4.2% and betel quid chewing 21.4%. Oral lesion/conditions namely leukoplakia, chewer's mucosa, lichen planus and oral submucous fibrosis were found in 8.8% with all of them indulging in risk habits. The overall prevalence of GSTM1 null genotype was 32.7%. Among subjects without risk habits, 21.1% (8/38) had GSTM1 null genotype while among subjects with risks habits the prevalence was 40.0% (24/60). Among those with risk habits, 47.8% (11/23) of quid chewers have GSTM1 null genotype as compared to 26.4% (19/72) of subjects who do not chew. These relationships were statistically significant [habits vs no habit ($p = 0.051$); quid chewers vs non quid chewers ($p = 0.054$)].

Conclusions:

Smoking was the most common risk habits in the study population. The prevalence of GSTM1 null genotype was higher in those with risk habits especially those who chew betel quid.

Seq #3 - Poster Presentation Travel Award -Senior
1:00 PM-2:30 PM, Thursday, October 9, 2008

GENOMIC DNA FROM BUCCAL CELLS FOR GENETIC SUSCEPTIBILITY STUDIES

Author:

L.P. KAREN-NG¹, E.S. YEO², K.L. QUECK², A.N. TING², Y.P. TEH², S. HASSAN², J. MARHAZLINDA², and R.B. ZAIN¹, ¹Oral Cancer Research & Coordinating Centre (OCRCC), University of Malaya, Kuala Lumpur, Malaysia, ²Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To compare the yield and quality of buccal cells genomic DNA from different collection techniques, for use in genetic susceptibility studies.

Methods:

Different collection techniques were employed to obtain DNA from blood leukocytes, buccal cells and saliva. Buffy coat(WBC) was obtained for the extraction of DNA from blood sample. The buccal cell DNA was collected using the cytobrush(BCC) and swish(BCS)(saline mouth rinsing) techniques while DNA from buccal cells in saliva was collected through the passive drool technique. DNA extraction was done using QIAamp[®] DNA Blood Mini Kit with slight modification. Quantification of DNA was done using the NanoPhotoMeter[®] and the DNA quality was determined from the $A_{260/280}$ ratio. Genotyping on GSTP1 gene using PCR-RFLP technique was done for some patients on DNA samples from different buccal cells collection techniques with DNA from blood samples of the same patients used as the gold standard.

Results:

Repeated measure detected significant differences in DNA yield between different collection techniques($p=0.000$). The WBC, BCS, BCC and saliva showed (105.3 ± 75.0) ng/ul, (28.2 ± 14.9) ng/ul, (8.2 ± 5.9) ng/ul and (5.9 ± 9.5) ng/ul DNA yield respectively. Post hoc test was done using paired-T-test with Bonferroni correction suggested that comparing WBC-BCS exhibited the least mean difference in their DNA yield. Meanwhile, the mean ratio for DNA quality were (1.8 ± 0.1) , (2.0 ± 0.3) , (2.3 ± 3.1) and (1.7 ± 0.9) for WBC, BCS, BCC and saliva respectively. However, the difference were not significance ($p=0.323$). Preliminary result on the genotyping revealed that the expression of GSTP1 genes for the three buccal cells collection techniques were comparable to the WBC technique.

Conclusions:

The swish technique for buccal cells collection gives the highest DNA yield while the quality of the swish technique has the highest consistency with the blood samples. All the buccal cell collection techniques showed comparable PCR-RFLP results to the WBC technique. [Funding: OCRCC-UM grant no. TA010/2007A]

Seq #10 - Poster Presentation

11:00 AM-12:30 PM, Friday, October 10, 2008

MULTIPLE INTELLIGENCES AND ACADEMIC PERFORMANCE AMONG MALAYSIAN UNDERGRADUATE DENTAL STUDENTS

Author:

R. AHMAD, N.H. ABU-KASIM, and A.K. PALANIAPPAN, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To identify the nature of multiple intelligences among dental students and investigate the relationship between these intelligences and performance in the various skill areas of dentistry.

Methods:

Sixty-one final year dental students at the Faculty of Dentistry, University of Malaya in Malaysia were administered a Multiple Intelligence Inventory [(MII), David Larear, 1991]] after their final written examinations. MII comprised 80 4-point likert items assessing eight types of multiple intelligences: Verbal/Linguistic, Visual Spatial, Logical Mathematical, Musical Rhythmic, Intra Personal, Body Kinesthetic, Inter Personal and Naturalist. These intelligences were correlated with six academic performance scores: Amalgam Class II, Composite, Crown & Bridge, Endodontic, Problem Based Learning and the Final Written Exam. The data were analysed by Pearson Product Moment Correlation and t-test.

Results:

Significant correlations were found between Intrapersonal intelligence and Composite ($r = .32$; $p < .05$) and between Body Kinesthetic and Composite scores ($r = .26$; $p < .05$). High Amalgam Class II scorers obtained significantly higher scores on Intrapersonal Intelligence than low scorers ($t = 2.49$; $p < .05$). High Composite scorers have significantly higher Body Kinesthetic intelligence than low scorers ($t = .29$; $p < .05$). Low endodontic scorers obtained significantly higher scores on Visual Spatial intelligence than high scorers ($t = 2.06$; $p < .05$). High PBL scorers obtained significantly higher Interpersonal ($t = 2.06$; $p < .05$) and Naturalist Intelligence ($t = 3.57$; $p < .05$) than low scorers.

Conclusions:

There appears to be no significant correlations between the various types of multiple intelligences and achievement in dentistry except for the correlations between Composite scores and Intrapersonal and Body Kinesthetic Intelligence. Generally, there were no significant multiple intelligence differences among high and low performers.

Seq #105 - Student Performance

3:30 PM-4:30 PM, Thursday, 29 June 2006 Brisbane Convention & Exhibition Centre Exhibit Hall 1

ASSOCIATION OF GSTM, GSTT1, AGE, GENDER, SMOKING AND ORAL CANCER-JAKARTA

Author:

R. AMTHA¹, B.O. ROESLAN², R.B. ZAIN¹, I.A. RAZAK¹, S.C. CHEONG³, W. GAUTAMA⁴, and D.J. PURWANTO⁴, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Trisakti University, Jakarta, Indonesia, ³Cancer Research Initiatives Foundation, Malaysia, ⁴University of Indonesia, Jakarta, Indonesia

Background:

Many genetic polymorphisms in metabolic enzymes are important risk factors in cancer. The glutathione S-transferases (GST) detoxify various agents such as tobacco product implicated in oral cancer. Both GSTM1 and GSTT1 genes have "null" alleles and are polymorphic. The risk estimates have shown large variations between population's studies. Objectives: To investigate GSTM1 and GSTT1 null genotypes on oral cancer susceptibility, in association with age, gender and smoking status.

Material and methods:

A hospital-based case-control study was done on 65 oral cancers and 66 healthy controls matched for age and sex. A polymerase chain reaction was used to genotype both GSTM1 and GSTT1 simultaneously. Logistic regression was used for statistical evaluation of the data.

Results:

There was no significant difference ($p > 0.05$) between sex and the frequency of GSTM1 null genotype in oral cancer (73.85%) compared to controls (62.12%), with odds ratio 1.58 (CI 95% 0.70-3.6). There was also no significant ($p > 0.05$) difference between the frequency of GSTT1 null genotype on oral cancer patients and controls respectively (29.23% and 33.33%), odds ratio 0.81 (CI 95% 0.36-1.80). However age and smoking habit had a significant correlation ($\text{Chi}^2 = 14.785$; $p = 0.000$, $\text{Chi}^2 = 11.215$; $p = 0.001$) to oral cancer in those who has GSTM1 and GSTT1 null.

Conclusions:

There was no significant difference in gender and proportion of GSTM1 and GSTT1 null genotype in oral cancer and healthy controls and the risk of oral cancer were the same. However older people with smoking habit and GSTM1 and GSTT1 null have higher risk.

Seq #154 - Cancer 1

11:00 AM-12:00 PM, Friday, 30 June 2006 Brisbane Convention & Exhibition Centre Exhibit Hall 1

HISTOMORPHOMETRY OF DENTAL IMPLANTS UNDER DIFFERENT LOADING CONDITIONS

Author:

G.E. ROMANOS¹, C.G. TOH², C.H. SIAR², D. SWAMINATHAN², and G.H. NENTWIG³,
¹University of Frankfurt, Germany, ²University of Malaya, Malaysia, ³University of Frankfurt, Frankfurt, Germany

Loading conditions may influence the bone healing around endosseous implants. The aim of this study was to evaluate histomorphometrically the bone around unloaded, delayed and immediately loaded implants with a progressive thread design placed in the posterior mandible. After extraction of the P2, M1 and M2 in the mandible of 9 monkeys and complete healing of the sockets: 6 Ankylos-implants (Degussa Co., Germany) were placed in 2 monkeys (group A). In 7 monkeys, 21 two-stage implants were placed and loaded 3 months after healing (group B). The B implants were loaded with temporary resin bridges at the same time with 21 one-stage implants placed in the contralateral regions (group C). The resin bridges were placed for one month and then they replaced by metal bridges for a 2 months. 3 months after healing (group A) or loading (group B and C) the animals were sacrificed. Bone/impl. contacts (BIC) and bone areas within the threads (BA-t), apical areas (BA-a) and distant to the interface (BA-c) were measured and were were:

BIC(A:50.2±9.0,B:67.9±1.6,C:64.2±0.6), BA-t(A:27.0±12.2,B:65.4±19.8,C:76.9±11.3),BA-a(A:37.5±18.0,B:73.9±23.5, C:54.3±17.1), BA-c(A:31.7±18.0,B:44.9±20.0, C:47.7±27.2). BA-t was higher in the group C and BA-a in the group B. In addition, BA-t was lower than BA-c in all of the groups (p<0.05). We concluded that common and immediate loading might stimulate the ossification of implants.

Seq #228 - Implant Histology and Cell Response

1:45 PM-3:45 PM, Friday, 8 March 2002 San Diego Convention Center Room 14A
(Mezzanine Level)

THE USE OF INDEX ORTHODONTIC TREATMENT NEED IN YEMENI ADOLESCENTS

Author:

R. ABDUSALAM, University of Malaysia, Kuala Lumpur, Malaysia, R. ABDUL KADIR, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia, N. ZAM ZAM, Private Clinic, Kuala Lumpur, Malaysia, and H. AWANG, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

This study aims to evaluate the need for orthodontic treatment of 14-year-old Yemeni adolescents in general and by variables zones, gender, urban and rural.

Methods:

A sample of 2400 students with equal proportion of males and females were selected from nine governorates (urban and rural) covering the whole topographical of Yemen which was divided into five zones (north, south, middle, east and west). Orthodontic treatment need was measured using the Index of Orthodontic Treatment Needs (IOTN). Clinical examination to assess dental health components (DHC) of IOTN was carried out under natural lighting, using disposable mouth mirrors and DHC rulers. Aesthetic components (AC) were evaluated both by students (ACS) and examiner (ACE).

Results:

DHC assessment showed 26.8% of population indicated great & very great need for treatment, 17.5% were in borderline category, 23.9% had a slight need and the percentage for no o treatment was 31.8%. In evaluating ACS, 86.6% were in no need or little need, 8.6% in moderate need and 4.7% in great need of treatment. Findings of ACE showed 71.0% do not need or had little need, 18.8% moderate need and 10.1% indicated great need for treatment. DHC and AC assessment showed boys showed more need for treatment than girls. Statistical significant differences were found between all zones in DHC and AC measurements at ($P \leq 0.005$).

Conclusion:

This study showed 44.3%, 13.3% and 28.9% of Yemeni sample were in great and borderline need of orthodontic treatment according to DHC, ACS and ACE, respectively.

This study was supported by University of Malaya, Grant No: P0222/2007A

Seq #6 - Oral Communication IV: Behavioural Science/Health Service Research/Dental Education 1

1:30 PM-3:00 PM, Thursday, October 9, 2008

OSTEOBLASTS RESPOND TO MILD-HEAT STRESS BY CHANGE IN OPG/RANKL RATIO

Author:

S. MEGHJI, UCL Eastman Dental Institute, London, United Kingdom, S.T. ONG, University of Malaya, Kuala Lumpur, Malaysia, A. MADDI, Eastman Dental Institute for Oral Health Care Sciences, National University of Singapore, London, United Kingdom, and G. VINAYAHAN, Eastman Dental Institute for Oral Health Care Sciences, London, United Kingdom

Objectives:

Molecular chaperones, also known as heat shock proteins (Hsps) and cell stress proteins, have a potent effect on bone remodeling(1;2). Hsps have evolved as intracellular protein-folding molecules essential in enabling cells to cope with environmental and physiological stress(3). Mild physiological stress such as change in pH or oxygen tension also has a potent effect on bone remodeling(4;5). We have investigated the effect of mild thermal stress on osteoblasts with reference to bone remodeling.

Methods:

Osteoblastic cell line; MG63 cells were exposed to 33°C, 37°C and 42°C for 90 minutes, then incubated overnight at 37°C. We assayed for OPG and sRANKL and tumour necrosis factor alpha (TNF α) protein and mRNA and heat shock proteins 27, 60, 70 and 90.

Results:

There was no expression of hsp60 and 70, HSP27 was slightly more up regulated at 33°C compared to 42°C, hsp90 was expressed at all temperatures studied. There was no change in TNF α levels. The expression of RANKL was significantly reduced at 42°C whereas there was no difference in the OPG levels. At 33°C OPG levels were significantly raised, and the RANKL levels were not affected.

Conclusions:

These results show osteoblasts respond differently to hyper-hypothermia, mild thermal stress suppresses RANKL synthesis at 42°C, with no effect on OPG in contrast at 33°C, OPG synthesis is suppressed with no effect on RANKL synthesis. In both cases altering the OPG/RANKL ratio, the balance between RANKL and OPG is critical for modulation of bone remodeling and in both cases would lead to inhibition of bone resorption (1)Nair et al. Calcif Tissue Int 1999 Mar;64(3):214-8. (2)Meghji et al. Bone 2003 33(3):419-25. (3)Gething M-J. Guidebook to molecular chaperones and proteins folding catalysts. Oxford University Press; 1997. (4)Arnett TR, et al. J Cell Physiol 2003 ;196(1):2-8. (5)Meghji et al.. Am J Physiol Endocrinol Metab 2001;280(1):E112-E119.

Seq #21 - Mineralised Tissue, including MINTIG prize

8:30 AM-10:30 AM, Thursday, 14 September 2006 Trinity College Dublin UiChadhain

NORMATIVE AND PERCEIVED NEED FOR ORTHODONTIC TREATMENT AMONG SCHOOLCHILDREN

Author:

M.Z. SITI ZURIANA, R. ESA, and I. ABDUL RAZAK, University of Malaya, Kuala Lumpur, Malaysia

Introduction:

The decision for orthodontic care is most often determined by normative need. However, a person's decision to seek orthodontic treatment is often based on multiple factors.

Objective:

To compare the orthodontic treatment need amongst 13 – 14 year-old schoolchildren using the Dental Health Component (DHC) and Aesthetic Component (AC) of the IOTN with the children's perceived need for orthodontic treatment.

Method:

A cross-sectional study was conducted on 700 schoolchildren attending 8 secondary schools in Jempol District. A multi staged and stratified random sampling was employed. Children's normative need was assessed using the DHC and AC of the IOTN by a trained researcher while their perceived needs were matched by using the photograph on the AC scale.

Results:

The normative need according to the DHC was 27.1% as indicated by the need treatment category while the AC indicated 21.9%. About 97% of the schoolchildren agreed with the dentist that they did not require treatment. In contrast, only 12.4% agreed with the dentist that they need treatment based on their AC scores. No significant difference was found between gender or ethnicity with the children's perceived need ($p > 0.05$). For both DHC and AC of dentist, the Chinese had the highest need for treatment followed by the Malays and Indians ($p > 0.05$)

Conclusions:

Perceived need among schoolchildren in certain population is low compared to the normative need. Therefore, evaluation of perceived need is useful in any treatment priority assessment in decision making for orthodontic services.

Funded by Grant No.P0200/2006C, University of Malaya and approved by the Ethical Committee, Faculty of Dentistry, University of Malaya

Seq #6 - Oral Communication IV: Behavioural Science/Health Service Research/Dental Education

MICROLEAKAGE OF ENDODONTICALLY RESTORED TEETH WITH DIFFERENT ADHESIVE SYSTEMS

Author:

B. ALI, University of Malaysia, Kuala Lumpur, Malaysia, and N.A. YAHYA, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To evaluate the sealing ability of quartz-fibre posts with a traditional luting agent and different adhesive resin systems.

Methods:

Sixty single rooted teeth were divided into three experimental (n=15) and one control group (n=15). Teeth were decoronated and endodontically treated. The specimens were restored by using white quartz-fibre post Aestheti-Plus™ post (Bisco, Inc. Schaumburg, IL, USA) with three adhesive resin systems and one traditional non adhesive system. Group 1 was restored with Aestheti-Plus™ post and Calibra™ Esthetic Resin Cement (dual-polymerized) (Dentsply Caulk, USA). Group 2 and 3 were restored similarly but used Post Cement Hi-XTM (auto-polymerized) (Bisco, Inc. Schaumburg, IL, USA) and Panavia™ F (dual-polymerized) (Kuraray Medical Inc. Okayama, Japan) respectively. In group 4, zinc phosphate cement (De Trey® Zinc Crown and Bridge Fixodont® Plus, Dentsply) was used as a control group. All specimens were thermocycled for 500 cycles at 5° C and 55° C. The specimens were then removed, dried and coated with nail polish and tin foil. Subsequently, the specimens were immersed in 2 % methylene blue dye for 24 hours. The specimens were washed and sectioned longitudinally dividing each into two equal halves. Depth of penetration was examined and measured by Leica imaging system. Data obtained was analyzed using ANOVA.

Results:

Statistical analysis showed significant difference in microleakage between the luting agents. Among the resin luting cements, Hi-X showed the least coronal microleakage. Zinc phosphate showed the most microleakage. No statistically significant difference was observed between Calibra and Panavia F cement.

Conclusions:

Within the limitation of this study, it can be concluded that the adhesive resin systems with fibre posts performed better as compared to the traditional non adhesive luting agent. Auto-polymerized resin luting cement (Hi-X) performed better than the dual-polymerized luting cements (Calibra and Panavia F).

Seq #167 - Clinical Investigations

1:30 PM-3:30 PM, Friday, 30 June 2006 Brisbane Convention & Exhibition Centre P1

PERI-IMPLANT SOFT TISSUE SUCCESS WITH ANKYLOS IMPLANT TAPERED ABUTMENT

Author:

C.H. SIAR¹, C.G. TOH¹, D. SEIZ², T.B.T. ALI¹, and S.T. ONG¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Johann Wolfgang Goethe University, Frankfurt, Germany

The clinical success of the Ankylos tapered abutment connection in implant-tooth supported bridges has been attributed to the peri-implant soft tissue stability and absence of a microgap found in many 2-stage implant systems.

Objective:

To determine the peri-implant soft tissue status of this clinical situation in a monkey model.

Methods:

Eight adult monkeys (*Macaca fascicularis*) were used. The second premolar-second molar regions of the mandible served as sites for implant-tooth supported 3-unit bridge placement – one side with tapered abutment connection, and the other with butt joint abutment connection, in a split mouth design. Extractions were performed, healing allowed for one month, following which standard 8mm Ankylos implants were inserted in the second molar regions using a submerged healing approach. Abutment connections and prosthesis placement were carried out 3 months later in both groups. The monkeys were sacrificed after 6 months of loading. All specimens were cut along the implant long axis in a mesio-distal direction and thin non-decalcified sections were obtained using the Exakt Cutting-Grinding System. Five peri-implant soft tissue indices i.e. coronal gingival-to-implant top distance (DIM), sulcus depth (SD), junctional epithelium (JE), connective-tissue-contact (CTC), and biologic width ($SD+JE+CTC=BW$) were estimated along the mesial and distal aspects of each implant with an Image Analyser equipped with a morphometry software package. For the natural abutment tooth, gingival mucosa height (GM), SD and JE were measured.

Results:

Peri-implant soft tissue dimensions in the tapered abutment group (DIM=0.85±0.19mm; SD=0.41±0.10mm; JE=0.43±0.05mm; CTC=0.49±0.09mm; BW=1.31±0.16mm) conformed closely to the physiological characteristics of the natural tooth abutment, but differed from those of the butt joint abutment group (DIM=0.93±0.29mm; SD=0.59±0.15mm; JE=0.59±0.16mm; CTC=0.77±0.37mm; BW=1.89±0.52mm) (SD, JE and BW $p<0.05$).

Conclusions:

Present findings support clinical reports that the physiologically-shaped gap-free Ankylos tapered abutment design promotes and enhances peri-implant soft tissue stability. This research was supported by Dentsply Friadent, Germany, R&D 40-02-03-002.

Seq #156 - Growth Factors in Implantology Research *in vivo*

9:00 AM-10:30 AM, Friday, 11 March 2005 Baltimore Convention Center 329

PREPARATION FORM AND EMERGENCE PROFILES OF MAXILLARY METALLOCERAMIC CROWNS

Author:

C. YOUNGSON, University of Liverpool, United Kingdom, and N.A. YAHYA, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To compare the emergence profiles of crowns with their contralateral tooth, in vitro, and determine if there is any association between the design of tooth preparations and the resultant emergence profile.

Methods:

50 models used for single crown construction were examined. Measurements of the faciolingual width of the crowns and contralateral teeth were taken using digital calipers. Internal line angles and the margin width of dies and the emergence profile of the corresponding crowns were measured from longitudinally sectioned polyvinylsiloxane indices of preparations and associated crowns mounted on a flat-bed scanner using image analysis software.

Results:

Using Students t tests, no statistically significant differences ($p > 0.05$) were found for shoulder width (mean 0.94 ± 0.23 mm), internal line angle (mean $105.83 \pm 13.57^\circ$) or emergence profiles ($28.56 \pm 12.95^\circ$) in the different (anterior, premolar or molar) preparations or crowns. The mean emergence profiles for all crowns was statistically significantly greater ($p < 0.001$) than the contralateral tooth (mean $15.33 \pm 7.77^\circ$). Using linear regression, there was a weak statistical relationship between emergence profile and margin width (Emergence profile $^\circ = 31.352 - 2.973 \times$ margin width (mm)). There was no statistical association between the internal line angle and the resultant emergence profile.

Conclusions:

In this in vitro study, the emergence profiles of crowns were higher than the contralateral teeth. Maxillary metalloceramic crown preparations had shoulder widths that did not conform to recommendations in standard texts but line angles were within a satisfactory range. The margin width exerts a weak effect upon the emergence profile of the crown.

Seq #42 - F. Prosthodontics Research, Poster Session II

2:00 PM-5:00 PM, Thursday, 14 September 2006 Trinity College Dublin Hamilton Building - Ground Floor

RELIABILITY OF CLEFT LIP AND PALATE QUALITY OF LIFE QUESTIONNAIRE

Author:

J. MARHAZLINDA¹, A. NIZAM², and L. NAING², ¹University of Malaya, Kuala Lumpur, Malaysia, ²University Science of Malaysia, Kota Bharu, Malaysia

Objective:

Often the primary reason for doing craniofacial treatments is to improve the patient's quality of life (QoL). However, little is known about the QoL in repaired cleft lip and palate (CLP) patients. As the first study in Malaysia, assessing the reliability and validity of CLP QoL instrument before it is used in the actual study is very important. It is to ensure that the questionnaire is measuring what it is suppose to measure in a reproducible and consistent manner. This study was conducted to assess the reliability of CLP QoL questionnaire in relation to five domains: general, physical, social, psychological and satisfaction with daily activities.

Methods:

A QoL questionnaire was first developed and customized for CLP patients from SF 36 and WHOQoL, 2 well accepted general quality of life questionnaire. A workshop involving expertise in relevant fields was conducted to validate the content. The final questionnaire was of total 56 items with 36 items distributed in four health related domains: general, physical, social and psychological health while the remaining 20 items were in satisfaction with daily activities domain. Item analysis was performed after questionnaire administered to 120 repaired CLP participants.

Results:

Based on the item analysis, a total of final 46 items were selected of which five, nine, four, ten and 18 items were distributed in general, physical, social, psychological and satisfaction with daily activities domains, respectively. The internal consistency reliability which represented by cronbach alpha were 0.70 (general), 0.83 (physical), 0.86 (social), 0.80 (psychological) and 0.94 (satisfaction with daily activities) with the total item correlation ranges from 0.40 – 0.78.

Conclusion:

From the item analysis, it suggests that the internal consistency reliability of CLP QoL questionnaire in relation to five QoL domains was fairly good.

Seq #9 - Oral Communication VII: Behavioural Science/Health Service Research/Dental Education 2

8:45 AM-9:30 AM, Friday, October 10, 2008

CRESTAL BONE REACTIONS TO MICROTHREADS INCORPORATED IN IMPLANT COLLAR

Author:

C.G. TOH¹, C.H. SIAR¹, D. SEIZ², T.B. TAIYEB-ALI¹, and S.T. ONG¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Johann Wolfgang Goethe University of Frankfurt, Frankfurt am Main, Germany

Stable crestal bone levels are believed to be critical for the long term success of implant treatment.

Objective:

To compare radiographically and histometrically crestal bone response to a new implant collar with microthread design with that of a smooth machined collar when used to support fixed prosthesis in the posterior mandible.

Methods:

After extraction of the second mandibular premolars and all three mandibular molar teeth of eight adult male *Macaca fascicularis* monkeys and a period of 1 month healing, 8mm implants (Ankylos®, Dentsply Friadent, Germany) with unknown collar designs (coded A, B and C) were inserted in a random order to replace the missing teeth. 3 implants on each side of the mandible were exposed and metal linked crowns were fabricated and cemented with polycarboxylate cement. One implant in the third molar position in each side of the jaw was left submerged as negative control. Radiographic records were taken at baseline, 3 months and 6 months. After 6 months, the animals were sacrificed for histometrical examination. An image analyser was used to measure distance from implant top to top of crestal bone (CBL) and distance from implant top to first bone contact (DIB).

Results:

Group A consisted of implants with smooth machined collars, whilst groups B and C had similar collar designs, i.e. polished machined collars with 13 microthreads, each thread being 0.02 mm deep. Implants with microthreads (Groups B and C) exhibited higher crestal bone levels (CBL) with decreased DIB values than implants with smooth machined collars, but the differences were not statistically significant. Conclusions: The results demonstrate that the microthread design in the Ankylos® implant collar provide good and stable crestal bone response that is better than the conventional smooth machined collar but not significant statistically nor clinically. This research was supported by Dentsply Friadent, Germany R&D 40-02-03-002.

Seq #200 - Cell Culture & Bone Formation

8:00 AM-10:00 AM, Saturday, 1 July 2006 Brisbane Convention & Exhibition Centre M1

FLUENCE OF PERIODONTAL DISEASE ON THE DISTRIBUTION OF CANDIDA KRUSEI

Author:

A.R. FATHILAH¹, W.H. HIMRATUL-AZNITA¹, R.H. AHMAD-ZAHIR¹, J. MARHAZLINDA², and N.A. BAHARUDDIN¹, ¹Univ. of Malaya, Kuala Lumpur, Malaysia, ²University of Malaya, Kuala Lumpur, Malaysia

Objective:

To observe the influence of periodontal disease on the distribution of *Candida krusei* at various sites in the oral cavity.

Methods:

Samples were collected from 5 sites (tongue, palate, buccal mucosa, saliva and gingival sulcus) in 15 subjects with healthy periodontium and 17 subjects with periodontal disease. Samples were cultured in Brain Heart Infusion Broth (BHI) and Chrom Agar (CA) over an incubation period of 48 hrs. Colonies that appeared pink velvet were noted for the presence of *Candida krusei*. Data on the occurrence of the colonies was entered and analysed using SPSS.

Results:

The presence of *Candida krusei* was observed in 80% of subjects with healthy periodontium and 41% of subjects with periodontal disease. Comparatively an increased in the presence of *Candida krusei* was noted in periodontal patients at the palate and saliva, whereas a decreased was recorded at the buccal mucosa and gingival sulcus. The proportion at the tongue however, remain unchanged. Chi square test shows significant difference in the presence of *Candida krusei* between subjects with healthy periodontium and periodontal patients ($p=0.026$), whereby two-third of *Candida krusei* isolates were observed in individuals with healthy periodontium.

Conclusion:

The distribution of *Candida krusei* at different sites in the oral cavity appeared to be influenced by periodontal disease.

This study was supported by FRGS grant (FP011/2006A) and Research University Grant (FS010/2007A).

INFLUENCE OF ABUTMENT DESIGN ON CRESTAL BONE IN IMPLANT-TOOTH-SUPPORTED BRIDGES

Author:

C.G. TOH¹, C.H. SIAR¹, D. SEIZ², T.B. TAIYEB-ALI¹, and S.T. ONG¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Johann Wolfgang Goethe University, Frankfurt, Germany The maintenance of crestal bone is considered essential for successful implant treatment.

Objectives:

To compare radiographically and histometrically crestal bone response to two different designs of implant abutments when used in implant-tooth-supported bridges.

Methods:

After extraction of all mandibular molar teeth and 1 month healing, standard 8mm implants (Ankylos[®], Dentsply Friadent, Germany) were placed in the region of the second molars of 8 M. fascicularis monkeys. Following 3 months of submerged healing, the implant in one side of each jaw was connected with a tapered (T) abutment and the implant on the contralateral side with a butt joint (B) abutment. The second mandibular premolars were trimmed to form the natural tooth abutments.

Metal 3-unit bridges that extended from the second premolar to the second molar were constructed connecting implant abutment to natural tooth abutment. Radiographic records were taken at baseline, 3 months and 6 months. After 6 months of function, the animals were sacrificed for histometrical examination. The radiographs were digitalized and images magnified to evaluate crestal bone levels on a 5-point scale. An image analyser was used to obtain histometrical measurements of distance from implant top to top of crestal bone (CBL) and distance from implant top to first bone contact (DIB).

Results:

Radiographically, horizontal crestal bone loss was insignificant but there was significantly more ($p < 0.05$) vertical crestal bone loss found in implants with B abutments. The results concur with histometrical findings whereby differences in DIB values were significantly more ($p < 0.05$) for implants with B abutment (0.92 ± 0.59 mm) as compared to implants with T abutments (0.45 ± 0.25 mm). CBL differences were not significant.

Conclusion:

Tapered abutment of the Ankylos[®] implant system can be successfully used to connect implants to natural teeth for fixed prosthesis.

This study was supported by Dentsply Friadent, Germany R & D Vote No. 40-02-03-0002.

HIGH BONE DENSITY WITH ANKYLOS IMPLANT -TOOTH SUPPORTED FIXED BRIDGES

Author:

S.T. ONG¹, C.H. SIAR¹, C.G. TOH¹, D. SEIZ², and T.B.T. ALI¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Johann Wolfgang Goethe University, Frankfurt, Germany

The progressive thread design of Ankylos® implant system allows load distribution to cancellous bone. This could contribute towards success in rigid implant-tooth connection.

Objective:

To compare bone-implant contact and bone density in implant-tooth supported bridges to two different abutment designs.

Methods:

The lower molars of eight adult monkeys (*Macaca fascicularis*) were extracted and healing allowed for one month. In a split mouth design, 8mm Ankylos implants were placed in the second molar regions and allowed to heal submerged. Three months later, one implant was connected to a tapered (T) abutment and the other to a butt-joint (B) abutment. Each implant was rigidly connected to prepared crown of second premolar by a metal bridge. The monkeys were sacrificed after 6 months of loading. Thin non-decalcified sections were prepared in mesio-distal direction. Three best consecutive threads were chosen for thread mean bone volume (MBV) percentage i.e. the area within thread occupied by bone divided by area bounded by each thread. Apical bone volume was similarly estimated. The bone-metal contact (BMC) was scored by subtracting the non-bone-contacting length from total thread length expressed as a percentage of the latter.

Results:

High bone density and bone-implant contact in both types of abutment connections were scored. The thread MBV (n=48) was 86.28%±18.82% for the T group and 88.66%±15.40% for the B group (p=0.74). At the apex (n=16), the MBV was 71.82%±26.66% for the T groups and 84.61%±22.11% for the B group (p=0.53). The bone metal contact (BMC) (n=48) was 90.43%±11.17% for the T group and 93.46%±10.75% for the B group (p=0.59).

Conclusions:

The results suggest that Ankylos implant is successful for rigid connection to a tooth in fixed bridges and not influenced by abutment design. This research was supported by Friadent, GmbH, Dentsply, Germany R&D 40-02-03-002.

Seq #113 - Implant-Host Interface *in vivo*

2:00 PM-4:00 PM, Thursday, 10 March 2005 Baltimore Convention Center Exhibit Hall E-F

[Back to the Implantology Research Program](#)

INFLUENCE OF ABUTMENT DESIGN ON CLINICAL STATUS OF PERI-IMPLANT TISSUES

Author:

T.B. TAIYEB-ALI¹, C.G. TOH¹, C.H. SIAR¹, D. SEIZ², and S.T. ONG¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Johann Wolfgang Goethe University, Frankfurt, Germany

Objective:

To compare the clinical soft tissue responses around implant-tooth supported 3-unit bridges utilizing tapered (T) abutments with those utilizing butt-joint (B) abutments.

Methods:

In a split-mouth design study, 8mm Ankylos® (Dentsply Friadent, Germany) implants were placed in the second mandibular molar region of 8 adult *Macaca fascicularis* monkeys about 1 month after extraction of all mandibular molars. Following 3 months of submerged healing, 3-unit metal bridges were constructed with second premolar as natural tooth abutment, first molar as pontic and the implants connected with a T abutment on one side and a B abutment on the contralateral side by random selection. Clinical data was collected blind to these abutment selections. Implants were clinically evaluated using Waite plaque index (PI), sulcus bleeding index (SBI), probing pocket depth (PPD), probing attachment loss (PAL), and width of keratinized mucosa (KMW) at baseline, 3-months and 6-months intervals.

Results:

At baseline all the clinical variables did not differ statistically between the T and B groups except for PPD ($p < 0.05$), where the mean PPD was greater in the B group (2.75 ± 1.02 mm) as compared to the T group (1.97 ± 0.65 mm). At the 3-month assessment, there was no difference in all clinical variables. After 6-months loading, no significant difference between these 2 groups was detected in all these variables with the exception of PAL ($p = 0.05$) where the mean PAL was greater for implants with B abutments (0.91 ± 0.86 mm) in comparison to T abutments (0.50 ± 0.88 mm).

Conclusions:

The differences in these mucogingival responses between these 2 groups at baseline (during seating of abutments, especially of B abutments) and after 6-months loading indicated enhanced peri-implant soft tissue stability around tapered abutments of this system. (Study was supported by Dentsply Friadent, Germany; R&D Vote No. 40-02-03-0002).

Seq #352 - Abutment-Implant Analysis

2:00 PM-4:00 PM, Saturday, 12 March 2005 Baltimore Convention Center Exhibit Hall E-F

BASEMENT MEMBRANE PROFILE OF KERATOCYSTIC ODONTOGENIC TUMOUR

Author:

M. HARTINIE¹, S.P. KHOO², C.H. SIAR¹, and S.H. LAU³, ¹University of Malaya, Kuala Lumpur, Malaysia, ²School of dentistry, International Medical University, Kuala Lumpur, Malaysia, ³Institute for Medical Research, Kuala Lumpur, Malaysia

Abstract:

Keratocystic Odontogenic Tumour (KCOT), formerly known as odontogenic keratocyst (OKC) has a high recurrence rate, which is a unique characteristic.

Objectives:

The present study was aimed at determining the presence of Collagen IV, Laminin 5, Matrix Metalloproteinase- 2 (MMP-2) and Matrix Metalloproteinase- 9 (MMP-9) in the basement membrane (BM) zone of KCOT in order to gain a better understanding of their role in the high recurrence rate of KCOTs. Methods:Haematoxylin and eosin-stained sections of 26 KCOT cases were grouped into I. Primary KCOT cases which had not recurred (KCOTnR) (n=12), II. Primary KCOT cases which had recurred (KCOTwR) (n=7) and III. Recurred KCOT (ReKCOT) (n=7). They were prepared for immunohistochemical staining for Collagen IV, Laminin 5, MMP-2 and MMP-9 with suitable positive and negative controls.

Results:

Group I showed Collagen IV expression in high percentage (75.0% cases) followed by Group II (28.6% cases) however this was not statistically significant; none of the Group III had positive staining. The expressions of Laminin 5, MMP-2 and MMP-9 at the BM zone were not significantly different between the Group I and Group II and between the Group II and III.

Conclusion:

Collagen IV, Laminin 5, MMP-2 and MMP-9 may be involved in the modulation of KCOTs' basement membrane integrity but may not be useful as a marker to predict the recurrence potential of KCOT.

Seq #10 - Poster Presentation

11:00 AM-12:30 PM, Friday, October 10, 2008

BONE HEALING EVALUATION AFTER IMMEDIATE AND DELAYED DENTAL IMPLANT PLACEMENT

Author:

L.T. YOUNIS¹, A.M. TAHER², M.I. ABU HASSAN¹, and S.T. ONG², ¹Faculty of Dentistry, University of Technology MARA, Shah Alam, Malaysia, ²Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To compare the bone healing and coronal bone remodeling following immediate (Im) and delayed (De) placement of titanium dental implants in extraction sockets.

Methods:

The study included forty-nine patients (28 women, 21 men), who needed implant treatment at the anterior teeth region of the maxilla or mandible. Twenty three subjects received 37 Im implants and 26 subjects received 37 De implants. The implants were placed immediately in the fresh sockets following the extraction in the Im group & approximately 6 months after extraction in the De group. The width and depth of the marginal bone defects mesially & distally to the implants were evaluated radiographically by using a computer program designed for measuring distances in the digitized radiographs.

Results:

In the Im group, the mean reduction of bone defect over time amounted to 48% (from 3.4 to 1.3 mm) was statistically significant ($P < 0.05$) when tested by sample t-test. In the De group, the mean reduction over time amounted to 17% (from 2.1 to 1.9 mm).

Conclusion:

Bone healing and remodeling takes place potentially in the fresh extraction socket defects associated with immediately placed implants. The main advantage of the immediate implantation is saving of clinical time and preservation of alveolar bone volume.

Seq #10 - Poster Presentation

11:00 AM-12:30 PM, Friday, October 10, 2008

MODIFICATION OF PMMA DENTAL RESIN WITH PALM OIL BASED POLYOL

Author:

N. SHAHABUDIN, N.H. ABU KASIM, and S.N. GAN, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

This study is an attempt to enhance the properties of conventional PMMA denture material by incorporation of a polyfunctional polyol derived from palm oil by copolymerization with methyl methacrylate monomer to overcome the low fatigue resistance property of PMMA.

Methods:

A series of copolymerizations of palm oil polyol with MMA was performed in solution. The polyol was added from 40-20 %, MMA from 20-40% , benzoyl peroxide as initiator was at 0.04% and toluene used as solvent was at 60 % of the total weight. The copolymerization was carried out in a 500ml-round-bottom reaction flask, equipped with a magnetic stirrer, for 7.5 hour at 80°C, in a water bath. The yield of each copolymerization obtained was recorded and the conversion was estimated gravimetrically. Later, the polymers acquired were analyzed by FTIR.

Results:

The copolymerizations have achieved conversions that ranged from 24% to 95%, where the higher conversion was obtained when the reactant mixture contain higher amount of MMA. The reaction produced a clear color, light-weighted copolymer that has the potential to be developed as denture material. The evidence of incorporation of the polyol into PMMA was given by the FTIR measurements, by comparing the spectrum of the copolymer to the spectrum of PMMA and polyol. Evaluations of the mechanical properties were currently being carried out.

Conclusion:

The new copolymers have potential of being developed into new dental materials. The branching structure of the copolymer was expected to improve the impact strength of PMMA. In addition, the palm oil based polyol was made from natural sustainable material.

This study was supported by E-Science fund, Grant No.: 03-0103-SF0190 and University of Malaya, Postgraduate Research Vote Grant No. : PS 079C/ 2007C and National Science Fellowship (NSF 2007/2008).

Seq #10 - Poster Presentation

11:00 AM-12:30 PM, Friday, October 10, 2008

FLEXURAL STRENGTH OF PMMA MODIFIED WITH PALM-OIL BASED POLYOL

Author:

N. SHAHABUDIN, N.H. ABU KASIM, and S.N. GAN, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

Biocompatibility is an important desirable property for a dental polymer and it can be achieved by utilizing more materials from natural sources. The flexural strength of an experimental polymer prepared from MMA monomer modified with palm-oil polyol was compared to two commercial resins, namely the Lucitone 199[®] (Dentsply Trubyte, USA) and Impact (Ivoclar Vivadent, Liechtenstein).

Methods:

The experimental polymer was prepared by copolymerizing MMA monomer and palm oil polyol. The resulting polymer was cast into a plate form and sectioned using a precision diamond saw (Buhler, Germany) to form 10 specimens of dimension, 65mm x 11mm x 5mm. These specimens were then polished to achieve a nominal dimension of 64mm x 10mm x 3.3mm. Another 10 specimens were prepared using Lucitone 199[®] and Impact according to the manufacturers' instructions and were polished by the same procedure. Their flexural strengths were determined using a three point bend test on an Instron Universal Testing Machine (Anytown, Australia) according to the procedure of test method ISO 1567. Data obtained was analysed using Oneway ANOVA (SPSS 12.0) at 95% confidence interval.

Results:

The mean flexural strength of Lucitone 199[®] was 127.39MPa (± 16.54), Impact was 177.57MPa (± 11.44) and experimental polymer was 51.62MPa (± 4.21). Although the experimental polymer has exhibited higher flexural strength than PMMA homopolymer, it has lower flexural strength when compared to Lucitone 199[®] and Impact denture base resins, both of which were filler-reinforced materials.

Conclusions:

In this preliminary study, the experimental polymer contained a significant proportion of non-petroleum based materials derived from palm oil. Its lower flexural strength is expected to be enhanced and improved through the incorporation of reinforcing fillers or fibers in future work.

This study was supported by E-Science fund, Grant No.: 03-0103-SF0190 and University of Malaya, Postgraduate Research Vote Grant No. : PS 079C/ 2007C.

Seq #296 - Prosthodontic and Maxillofacial Materials

1:45 PM-3:00 PM, Saturday, July 5, 2008 Metro Toronto Convention Centre Exhibit Hall D-E

THE EFFECT OF GLASS-FIBER REINFORCEMENT ON THE REPAIR STRENGTH

Author:

S. ELHADIRY, N. YUNUS, and M.I. ABU-HASSAN, University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study evaluated the flexural strength and fracture mode of auto-polymerized repair that was reinforced with an E-glass fiber.

Methods:

32 heat-polymerized polymethyl methacrylate PMMA (Meliodent) specimens measuring 75x10x3.5mm were fabricated and divided into 4 groups. Each specimen was cut in half with the joint ends rounded off and fixed to an open ended plaster mold. A 3-mm space was provided for the repair material (Meliodent). 2 groups had in addition, a cavity (2 x 3.5 x 10.16 mm) prepared at each repair end; one was reinforced with 2 layers of silanized E-glass woven fibre (Fiber-Splint) while the other was repaired without reinforcement. Another group was repaired without cavity preparation and reinforcement; the control group was left intact. A 3-point bending test was used to determine the flexural strength. Data was analyzed with a 1-way ANOVA and Tukey's post-hoc test.

Results:

ANOVA showed a significant difference in the mean flexural strength for all groups ($p < 0.05$). The flexural strength of the control was 79.71 ± 1.48 MPa. The group repaired with cavity and glass-fiber reinforcement had a significantly higher value (61.90 ± 2.12 MPa) than the two non-reinforced repair groups (With cavity = 54.31 ± 4.37 MPa; Without cavity = 54.55 ± 5.29 MPa). No significant difference was shown between these 2 non-reinforced groups ($p > 0.05$). The flexural strength of repaired specimens with reinforcement was 78% of the control strength as compared to 68% shown by the non-reinforced groups. 60% of specimens in reinforced group exhibited adhesive failure compared to 80% in the two non-reinforced groups.

Conclusions:

Glass-fiber improved the flexural strength of the repair and cavity preparation at repair joints had no effect on the strength. Glass fiber-reinforced group exhibited a higher percentage of adhesive failure compared to non-reinforced groups. Fund: VoteF; University of Malaya

30 June 2006 Brisbane Convention & Exhibition Centre

DEMINERALIZATION POTENTIAL OF QAT EXTRACTS AT COMPOSITE RESTORATION INTERFACE

Author:

K. AL-ALIMI¹, N.H. ABU KASIM¹, and R. AHMAD², ¹University of Malaya, Kuala Lumpur, Malaysia, ²Universiti Teknologi MARA, Shah Alam, Malaysia

Objective:

To evaluate the demineralization potential of qat extracts at composite restoration interface.

Methods:

Class V cavities were prepared on the buccal surface of thirty extracted sound premolars and were restored with a nanohybrid composite (Grandio, VOCO, Germany). Specimens were subsequently coated with nail varnish exposing 2mm of enamel around the restoration margin. The specimens were divided into three equal groups of 10 and were then immersed in acid gel and qat extracts (10% and 20%) for 4 weeks. All specimens were removed and washed using deionized water and later examined by direct vision and stereomicroscope prior to sectioning. Specimens were then immersed in distilled water for 24 hours, following which the sections were examined under polarized light microscope and demineralized area was measured as outer and wall lesion in the coronal and cervical part of restoration using image analyzer software (Image-Pro Version 4.5). Data were subjected to One-way MANOVA.

Results:

All specimens immersed in acid gel and qat extracts (10% and 20%) exhibit demineralization at the restoration interface. The One-way MANOVA also indicated significant differences between the three groups on the different restoration interface (P<.05) and Tukey multiple comparison test was also performed as illustrated in the table below.

Conclusion:

10% and 20% qat caused significantly lower demineralization at restoration interface compared to acid gel. This study was supported by a research grant from University of Malaya, P0218_2007a.

	Restoration Interface			
	Coronal Outer Demineralisation Mean Depth (µm)	Coronal Wall Demineralisation Mean Depth (µm)	Cervical Outer Demineralisation Mean Depth (µm)	Cervical Wall Demineralisation Mean Depth (µm)
Acid Gel	256.29 (± 142.78) ^a	193.61 (± 120.50) ^{ab}	253.93 (± 98.08) ^a	251.07 (± 102.56) ^{ab}
Qat 10%	77.24 (± 47.47) ^{ab}	116.43 (± 117.50)	99.71 (± 72.70) ^{ab}	150.12 (± 106.25)
Qat 20%	104.88 (± 58.44) ^{ab}	72.42 (± 65.61) ^a	116.81 (± 58.20) ^{ab}	111.58 (± 81.68) ^a

^a Significant at p<0.05
^b Not Significant

FLEXURAL PROPERTIES AND HARDNESS OF A LIGHT-POLYMERIZED DENTURE POLYMER

Author:

I.L. ALI, N. YUNUS, and M.I. ABU-HASSAN, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

This study compared the flexural strength (FS), flexural modulus (FM) and hardness (H) of a new light-polymerized polyurethane (Eclipse) to a heat-polymerized (Meliodent) and an auto-polymerized (Probase Cold) polymethyl methacrylate denture base polymers.

Methods:

Specimens were prepared according to the manufacturers' instructions. Meliodent specimens were polymerized in a water-bath at 70°C for 7 hours with a 1 hour terminal boil while Probase Cold specimens were left to polymerize under pressure in the flask for 30 min at a temperature of 23°C. Eclipse specimens were prepared by adapting a layer of base-plate resin to the cast which was pre-heated to a temperature of 55°C. Polymerization was carried out in a visible light processing unit for 10 min. All specimens were immersed in water at 37°C for 30 days. FM and FS were determined using a 3-point bending test based on ISO 1567. Vickers hardness was measured on a microhardness tester using a penetrating load of 300 ±1g. ANOVA and post-hoc Scheffe's test were used for statistical comparison for each property.

Results:

ANOVA showed significant differences in the mean values of FS, FM and hardness for the three materials ($p < 0.05$). The highest values were observed for Eclipse while Probase Cold showed the lowest values. There were also significant differences in the FS, FM and hardness values between Meliodent and Probase Cold.

	FS (MPa) n=10	FM (MPa) n=10	H (Vickers) n=15
Eclipse	102.5 ± 4.24	2497.60 ± 142.97	19.37 ± 0.77
Meliodent	77.86 ± 3.11	1969.20 ± 55.05	17.03 ± 0.39
Probase Cold	63.44 ± 4.24	1832.00 ± 88.87	16.03 ± 0.39

Conclusion:

The new light-polymerized polyurethane-based denture polymer exhibits higher flexural properties and is harder than both heat- and auto-polymerized PMMA denture base polymers. Fund: VoteF; University of Malaya

Seq #57 - Prosthodontic Materials 1

11:00 AM-12:00 PM, Thursday, 29 June 2006 Brisbane Convention & Exhibition Centre
Exhibit Hall 1

THE EFFECTS OF OXYGEN-BASED DISINFECTANT ON DIMENSIONAL ACCURACY OF ALGINATES

Author:

Y.P. MUK, W.A. MAHMOOD, and N.H. ABU-KASIM, University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study evaluated the effect of an active oxygen based disinfectant, 2% Perform[®] (Schulke & Mayr, Germany) on the dimensional accuracy of four alginates, Alginoplast (Heraeus Kulzer, Holland), Kromopan (LASCOD, Italy), Alginmax (MAJOR, Italy) and Duplast (Dentsply, China).

Method:

A cobalt chromium master model with four cylindrical studs representing 2 canines and 2 molars was constructed. A total of 40 impressions for each alginates were taken and treated in 4 different conditions, Immediate pour (control); 10 minutes immersion in distilled water; 10 minutes immersion in 2% Perform[®] and 30 minutes in 2% Perform[®]. The impressions were then poured in Type III stone. Dimensional changes between the master model and the resultant casts were measured using traveling microscope. The % change at an antero-posterior dimension (C) and 3 different interarch dimensions (A,B and D) were noted.

Results:

Two way ANOVA showed significant interaction between alginates and treatment conditions except for dimension B and D. One-way ANOVA test and Student-Newman-Keuls indicated no significant difference ($P > 0.05$) in dimensional accuracy of impressions treated with Perform[®] for 10 minutes compared to the control group except for Alginoplast (dimension A) and Duplast (dimension C and D). The maximum deviation in the dimension after 10 minutes Perform[®] immersion was 0.552% for Duplast and 0.147% to 0.213% for other alginates. Immersion in Perform[®] for 30 minutes produced maximum deviation of 0.591% for Duplast in dimension C whilst 0.223% to 0.235% for other alginates.

Conclusion:

Active oxygen based disinfectant has an effect on the dimensional accuracy of the resultant cast for the 4 alginates. Although some results indicated significant change, the magnitude of deviation was clinically negligible. Apart from Duplast, all the alginates indicated good stability in 2% Perform[®] even up to 30 minutes of immersion time. (This study was supported by University of Malaya ; R&D FO200/2003D)

Seq #215 - Impression Material & Dimension Behavior

2:00 PM-4:00 PM, Friday, 11 March 2005 Baltimore Convention Center Exhibit Hall E-F

EVALUATION OF OBTURATION QUALITY IN ROUND AND IRREGULAR ROOT CANALS

Author:

A.A. MADFA, and Y.L. THONG, University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study compared the quality of root canal obturation in round and irregular-shaped canals at two cross-sectional levels by evaluating the canal area filled by two core materials using two obturation techniques.

Methods:

Single canals in 60 mandibular premolars were instrumented, irrigated and divided into four equal groups. They were root filled as follows: lateral compaction/RealSeal™ (LC/R), lateral compaction/gutta-percha (LC/GP), warm vertical compaction/RealSeal™ (WC/R) and warm vertical compaction/gutta-percha (WC/GP). The teeth were sectioned horizontally at 3 mm (L3) and 6 mm (L6) intervals from the obturated canal terminus. Shapes of canals in all cross-sections were examined using a Leica Qwin Colour (RGB) image analyzer. To determine whether the shape of each canal was round or irregular, the buccolingual and mesiodistal canal diameters were measured. The cross-sectional area of RealSeal™ and gutta-percha core materials were measured utilizing the same image analyzer. Data were analyzed using general linear model and independent sample t test.

Results:

Descriptively, at L3 and L6, the areas of both filling core materials were higher in round than in irregular canals. WC/R and WC/GP also showed higher areas than LC/R and LC/GP in irregular canals. Statistically, at L3, there were no significant differences in obturation quality between round and irregular-shaped canals ($p>0.05$). At L6, for techniques, there were no significant differences between the two shapes ($p>0.05$). For materials, at L6, WC/R showed a significantly higher area than WC/GP in irregular canals ($p<0.05$). However in round canals, there was no significant difference ($p>0.05$). For LC/R and LC/GP, there were also no significant differences between both shapes at L6 ($p>0.05$).

Conclusions:

Generally, obturation quality was better in round than in irregular canals. WC/R and WC/GP produced better adaptation than LC/R and LC/GP in irregular canals especially for WC/R at L6. (Supported by P0191/2006B, University of Malaya).

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

BOND STRENGTH OF LUTING CEMENTS TO TURKOM-CERA ALL-CERAMIC MATERIAL

Author:

B.M.A. AL-MAKRAMANI¹, A.A.A. RAZAK¹, and M.I. ABU-HASSAN², ¹University of Malaya, Kuala Lumpur, Malaysia, ²Universiti Teknologi MARA, Shah Alam, Malaysia

Objectives:

The aim of this study was to evaluate the shear bond strength (SBS) of Zinc phosphate cement Elite, glass ionomer cement Fuji I, resin modified glass ionomer cement Fuji Plus (GC Corporation, Tokyo, Japan) and resin luting cement Panavia-F (Kuraray Medical Inc., Okayama, Japan) to Turkom-Cera (Turkom-Ceramic (M) Sdn. Bhd., Kuala Lumpur, Malaysia) all-ceramic material.

Methods:

Turkom-Cera was used to form discs 10mm in diameter and 2mm in thickness (n=40). The ceramic discs were wet ground to ensure flat parallel surfaces, air-particle abraded with 50- μm Al_2O_3 particles and randomly divided into four groups (n=10) that were determined by the type of cement used. The luting cements were bonded, as per manufacturer instructions to Turkom-Cera discs using a bonding jig recommended by ISO TS 11405/2003 . Then the bonded specimens were stored in distilled water for 24 hours at 37°C. SBSs were determined using the universal testing machine (Instron) at 0.5mm/min crosshead speed and then calculated to MPa.

Results:

Mean (MPa) and standard deviation are shown below:

Cement	N	Mean	SD	95% Confidence Interval	
				Lower Bound	Upper Bound
Elite	10	0.92	0.42	0.62	1.22
Fuji I	10	2.04	0.78	1.48	2.60
Fuji Plus	10	4.37	1.18	3.52	5.22
Panavia F	10	16.42	3.38	14.01	18.84

The data were analyzed by the Levene's test and Dunnett's T3 post-hoc test at a pre-set significance level of 5 % because of unequal group variances ($P < 0.001$). There was statistically significant difference between the four luting cements tested. The mean SBS of Panavia-F was significantly higher than Elite, Fuji I and Fuji Plus ($p < 0.05$).

Conclusion:

The results of this study indicate that selection of the appropriate luting cement is a key factor for achieving a strong bond to Turkom-Cera all-ceramic material. The phosphate-containing resin cement Panavia-F exhibited SBS value significantly higher than all materials tested.

This study was supported by a grant (P0197/2006C); University of Malaya, Kuala Lumpur, Malaysia.

DENTURE CLEANSERS AND DISINFECTANT EFFECT ON SORPTION IN SOFT LINERS

Author:

O.T. ALIRHAYIM, Faculty of Dentistry, Kuala Lumpur, Malaysia, and W.A.A. MAHMOOD, University of Malaya, Kuala Lumpur, Malaysia

Objective:

A study was carried out to assess weight changes in three auto polymerized silicone soft denture liners; GC(Soft and extra soft, GC,Japan) and Mollosil plus (Detax, Germany) after immersion in different denture cleansers; Polident (Kobayashi Block Co., Ltd. Osaka, Japan), Steradent (Reckitt & Colman., UK), Protefix (Queisser Pharma, Germany)and one disinfectant; Perform (Schulke & Mayr. Asia Ltd.).

Methods:

The Soft lining materials were mounted on the prepared disc form (14 mm x 2 mm) acrylic resin base (meliodent, Heraeus Kulzer,Germany), n = 75. Five specimens from the three soft liners were immersed in each denture cleanser and one disinfectant for 8 hours; this represented the normal overnight cleansing regime. Fresh solutions of denture cleanser and disinfectant were prepared each day and following the immersion period, the specimens were stored in tap water at 37°C for the remainder of 24-hour period (24 -8 = 16hrs). This procedure was repeated for 60 days with the interval of 3,7,14, 28 and 60 days. The Control specimens were stored in tap water at 37°C. Sorption was expressed as a percent of weight loss or gain compared with the weight of the initial sample by using digital electronic balance (sartorius, Germany).

Results:

The GLM Repeated Measures procedure was conducted to test the null hypotheses about the effects of both the subjects factors and the within factors. The results of the analysis indicated that there is a significant effect ($P < 0.05$) in terms of weight gain for immersion period and there is a significant interaction effect for immersion period-by-material and immersion period-by-denture cleanser.

Conclusion:

Significant weight gain with longer immersion period but the amount of weight gain is dependent on type of material and denture cleanser.

This study was supported by IPPP-P0210/2007A; University of Malaya, Kuala Lumpur, Malaysia

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

OXYGENE GEL[®] AS AN ADJUNCT TO TREATMENT OF PERIODONTAL POCKETS

Author:

T.B. TAIYEB-ALI, B.S. KAVEH, and T.N. MOHD-DOM, University of Malaya, Kuala Lumpur, Malaysia

Objective:

Present clinical trial was designed to study effect of Oxygene Gel[®] Aloe enriched on healing of periodontal pockets following mechanical non-surgical therapy.

Methods:

Sample included 16 patients, with chronic adult periodontitis. These patients had paired teeth with pockets ≥ 6 mm in opposing sides of the mouth in this crossover design study. Fifty-eight teeth with pockets measuring 6-9 mm were alternately assigned to 2 treatment groups: scaling and root planing as well as application of test gel versus scaling and root planing alone. Root planing was performed at baseline for test and control teeth. The test gel was injected into pockets of test teeth at baseline, 1-week and 2-weeks intervals. One of the control teeth was extracted during the study eventually leaving 28 control teeth which were evaluated against the paired 28 test teeth. The trial extended over an 8-week period and assessments of probing pocket depth (PPD), loss of attachment (LOA), mobility, bleeding on probing (BOP) and plaque indices were made at baseline, 4th and 8th week intervals following therapy. Statistical analysis was performed using Wilcoxon Matched-Paired Signed Rank test.

Results:

The test gel as an adjunct to mechanical therapy significantly decreased PPD ($p < 0.05$ – < 0.001) on all 5 surfaces except on the midbuccal; reduced LOA ($p < 0.05$ – < 0.01) on the midlingual and distolingual surfaces; decreased BOP scores ($p < 0.05$ – < 0.001) on the mesial, distal and lingual sites and decreased mobility scores ($p < 0.05$) of test teeth at the 8th week interval as compared to control group.

Conclusion:

Results of this study conducted on patients with teeth having deep periodontal pockets of ≥ 6 mm suggests a possible role for this gel of Chlorine dioxide and Aloe vera in the treatment of chronic adult periodontitis compared to nonsurgical treatment alone. (Study supported by Vote F, University of Malaya)

BIAXIAL FLEXURAL STRENGTH OF TURKOM-CERA COMPARED TO CORE- AND VENEER-CERAMICS

Author:

B.M.A. AL-MAKRAMANI¹, A.A.A. RAZAK¹, and M.I. ABU-HASSAN², ¹University of Malaya, Kuala Lumpur, Malaysia, ²Universiti Teknologi MARA, Shah Alam, Malaysia

Objectives:

The aim of this study was to compare the biaxial flexural strength of three core- and one veneer-ceramic materials.

Methods:

Four groups of 10 disc specimens (16 mm diameter x 1.2mm thickness in accordance with ISO-6872, 1995) were made from the following ceramic materials: Turkom-Cera Fused Alumina core (Turkom-Ceramic (M) Sdn. Bhd., Kuala Lumpur, Malaysia), In-Ceram core (Vita Zahnfabrik, Bad Sackingen, Germany), Vitadur-N core (Vita Zahnfabrik, Bad Sackingen, Germany) and Vitadur-Alpha veneer porcelain (Vita Zahnfabrik, Bad Sackingen, Germany), which were prepared and sintered according to manufacturer's recommendations. The specimens were subjected to biaxial flexural strength test using a universal testing machine at a cross-head speed of 0.5 mm/min. The definitive fracture load was recorded for each specimen and the biaxial flexural strength was calculated from an equation in accordance with ISO-6872.

Results:

The mean biaxial flexural strength was for Turkom-Cera (506.8±87.01 MPa), In-Ceram (347.4±28.83 MPa), Vitadur-N (128.7±12.72 MPa) and Vitadur-Alpha (58.2±8.54 MPa). The results were analyzed by the Levene's test and Dunnett's T3 post-hoc test (SPSS software V11.5.0 for Windows, SPSS, Chicago, IL, USA) at a pre-set significance level of 5 % because of unequal group variances ($P < 0.001$). There was statistically significant difference between the core and veneer-ceramics. The biaxial flexural strength of all-ceramic core materials was significantly higher than the veneer ceramic. The mean biaxial flexural strength of Turkom-Cera was significantly higher than In-Ceram and Vitadur-N core ceramics ($p < .05$).

Conclusions:

The results of this study are important to both dentists and technicians in order to select the most appropriate all-ceramic system. Turkom-Cera core has significantly higher flexural strength than In-Ceram and Vitadur-N core ceramics and Vitadur-Alpha veneer ceramic.

This study was supported by a grant (P0197/2006C); University of Malaya, Kuala Lumpur, Malaysia.

EFFECTIVENESS OF ANTIBIOTICS AND CALCIUM HYDROXIDE AGAINST ENTEROCOCCUS FAECALIS BIOFILM

Author:

W.L. CHAI, H. HAMIMAH, S.C. CHENG, A.S. ATIYA, and A. MARIAM, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The aim of this study was to compare the antimicrobial efficacy of calcium hydroxide [Ca(OH)₂] and six groups of antibiotics against *Enterococcus faecalis* biofilm.

Methods:

Two-day old biofilm of *E. faecalis* (ATCC 29212) were prepared on membrane filter discs. The discs were then placed in 10 ml of test agents, and incubated for 1 hour at 37°C in an aerobic incubator. The test agents were: ampicillin, co-trimoxazole, erythromycin, oxytetracycline, vancomycin, vancomycin followed by gentamicin, Ca(OH)₂ and phosphate buffered saline (PBS, as a control group). The antimicrobial activity of the agents was neutralized by washing the discs five times with 10 ml of PBS each. Bacterial cells were removed from the discs by sonication for 5 minutes using an ultrasonic machine. The suspension was diluted 10-fold and plated on Columbia horse blood agar plates. Colony-forming units were counted after 24 hours of aerobic incubation.

Results:

Only erythromycin, oxytetracycline and Ca(OH)₂ showed 100% kill. T-test also revealed a statistically significant difference ($p < 0.05$) for the other 4 groups of antibiotics. Their antimicrobial efficacy in a descending order was as follow: co-trimoxazole, ampicillin, vancomycin & gentamicin, and vancomycin.

Conclusion:

Erythromycin, oxytetracycline and calcium hydroxide were able to thoroughly kill the 2-day *E. faecalis* biofilm on membrane filter discs. This study was supported by the University of Malaya, F0376/2004B.

HARDNESS AND COLOR STABILITY OF DENTURE BASE POLYMERS AFTER DISINFECTION

Author:

I.A.A. RAHMAN, N. YUNUS, and M.I. ABU-HASSAN, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The study investigated the effect of a disinfection procedure on the surface hardness and color stability of a light-polymerized polyurethane (Eclipse) and three polymethyl methacrylate (PMMA) denture base polymers: Meliodent, a conventional heat-polymerized; Lucitone 199, a high impact heat-polymerized; ProBase, an auto-polymerized PMMA.

Methods:

Twenty rectangular-shaped specimens (65x10x2.5 mm) were fabricated from each material according to the manufacturer's instruction and stored in water at 37°C for 30 days. Specimens were randomly selected (n=10), scrubbed for 1 minute with 4% chlorhexidine gluconate and immersed in 1% sodium hypochlorite disinfectant for 10 minutes before tested for Vickers hardness (VH). The controls were not disinfected. Color changes (ΔE^*) were measured using Dataflash[®] 100 colorimeter at 10 minutes (T10) and 1 hour (T60) after immersion in the disinfectant. Data was analyzed using ANOVA, Scheffe's and t-test at 95% confidence level.

Results:

ANOVA showed a significant difference in the VH values for the four materials ($p < 0.05$) with Eclipse exhibiting the highest and ProBase the lowest. The VH for Meliodent and Lucitone 199 were not significantly different (*, 1.i). Eclipse demonstrated a significant decrease in VH after disinfection while the others were not affected. There was a significant color change for ProBase specimens between 10-minute and 1-hour immersion in sodium hypochlorite disinfectant

Material	Vickers Hardness			Color change		
	Control Mean	Disinfected Mean (SD)	p-value (t-test)	T10	T60	p-value (t-test)
ProBase	12.1±1.5	11.4±1.0	0.101	0.41±0.24	0.86± 0.62	0.039
Lucitone 199	15.0±0.6*	15.2±0.51.i	0.517	0.39±0.21	0.38± 0.18	0.261
Meliodent	16.3±0.6*	16.2±0.81.i	0.135	0.33±0.15	0.37±0.13	0.713
Eclipse	18.8±0.9	17.4±0.7	0.010	0.58±0.33	0.64±0.38	0.564

Conclusion: The hardness of Eclipse was reduced by the disinfectant procedure and ProBase demonstrated a color change after 1hour immersion in sodium hypochlorite disinfectant.

CHILD-TO-CHILD ORAL HEALTH PROMOTION PROGRAM - A QUALITATIVE EVALUATION

Author:

N. JAAFAR¹, W.S. WAN HUSSEIN¹, Z. A MANAF¹, K. OMAR², and J. AHMAD³, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Ministry of Health, Kelantan, Malaysia, ³Ministry of Health, Pahang, Malaysia

The WHO encourages the “healthy schools” concept to promote health in children. Oral health must be promoted within the context of general health. However implementation is problematic because of scarce manpower. Thus child-to-child teaching offers a promising alternative in developing countries. Very few programs have been evaluated in the long term.

Objective:

- 1) To evaluate the perceived impact of Junior Doctors (JD) Program after ten years of implementation.
- 2) To identify factors affecting success and sustainability of the program.

Method:

The basic concept of JD is to train children as part of official co-curriculum and officially appoint them so that they can teach other students and be good role models. About 35 children aged 10-12 years were selected in every school in the state based on certain criteria. The JD concept aims to create a total healthy school environment using children as the main facilitators. Independent evaluation was done on four groups using Focused Group Discussion viz children, teachers, program administrators and parents.

Results:

There is a perceived improvement in knowledge, opinion, attitude and behavior of the children, benefit to the school health environment, and the personal development of the JD themselves. This was corroborated by the views of significant others.

Conclusion:

The programs' success and sustainability can be attributed to the appreciation by stakeholders that it satisfies the needs of the consumers themselves rather than the needs of the health educators only. This may be a good model for promoting health and oral health in healthy school settings in developing countries. (Supported by Vote F 717/2003B Univ. Malaya).

STUDY ON THE ADHESION OF CANDIDA TROPICALIS ON DENTURE PLATES

Author:

W.H. HIMRATUL-AZNITA, A.R. FATHILAH, N.A. BAHARUDDIN, R.A. OMAR, and R.H. AHMAD-ZAHIR, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To determine the anti-adhesion effect of antimicrobial agents against *Candida tropicalis* to acrylic resin denture plates.

Methods:

Denture plates were coated with saliva and recoated with three types of antimicrobial agents; 0.12% chlorhexidine gluconate (CHX) (Oradex®), 0.1% hexetidine (Hx) (Bactidol®) and Cetylpyridinium Chloride (CTP) (Steradent®), respectively. The coated plates were then immersed in *Candida tropicalis* suspension for one minute, after which the plates were transferred into saline solution and sonicated. The resulting suspensions were plated on Sabouraud Dextrose Agar, and incubated for 48hrs. Following this, the CFU of the adhered microbes were enumerated and analysed.

Results:

It was observed that denture plates coated with CHX allowed the adherence of 100 CFU/ml of *C.tropicalis*. The adherence to Hx and CTP-coated plates were however totally inhibited. Upon two times dilution of the antimicrobial agents, the adherence was recorded at 100 CFU/ml, 300 CFU/ml and 1900 CFU/ml for Hx, CHX and CTP, respectively.

Conclusions:

Hx and CHX exhibited a stronger anti-adherence effect towards *C.tropicalis* compared to CTP. Thus, it is suggested that oral rinses containing Hx or CHX can be a better substitute to commercialized denture cleaner containing CTP.

This study was supported by FRGS grant (FP011/2006A) and Research University Grant (FS010/2007A)

EFFECT OF P.BETLE EXTRACT ON THE ULTRASTRUCTURE OF S.MUTANS

Author:

N. THURAIRAJAH, and Z.H.A. RAHIM, University of Malaya, Kuala Lumpur, Malaysia

To date, very little information is available about *Piper betle* (*P.betle*) that are associated with its antibacterial activity towards oral microorganisms.

Objectives:

The purpose of this study is to investigate the effect of partially purified *P.betle* leaves extract on the integrity of *Streptococcus mutans* (*S.mutans*) ATCC 25175 using transmission electron microscopy. Ultrastructural studies provide visual clues to determine the antibacterial effect of the extract.

Methods:

Partially purified *P.betle* leaves extract was prepared by decoction followed by solvent extraction with ethanol. The extract was later concentrated to dryness and then reconstituted in sterile deionised water for further application. The bacterial suspension used was adjusted spectrophotometrically (OD550nm) to about 0.144 and was treated with the extract 0.5mg/ml and 1mg/ml, respectively for 30 minutes. Mouthrinse containing chlorhexidine (0.12%) and sterile deionised water was used as positive and negative control, respectively. The control and the extract treated cells were fixed in glutaldehyde and later postfix in 1% osmium tetroxide (0.1M cacodylate buffer) at room temperature. After eliminating the remaining osmium tetroxide, the samples were dehydrated in a graduated cold ethanol series (35% to 100%). Each step was performed for about 10 min to 15 min at room temperature. The fixed cells were embedded with Epon, and the small blocks of bacteria were cut with an ultramicrotome and the ultra thin sections were analyzed using transmission electron microscope.

Results:

The *S.mutans* that were treated with partially purified *P. betle* leaves extract when compared with control appeared to have coagulated nucleoid and progressive destruction of the plasma membrane and the effect is more pronounce at higher concentrations(1mg/ml). The cell wall of the treated and control cells was observed to be densely stained indicating it is still intact.

Conclusions:

Partially purified *P.betle* leaves extract exhibit bactericidal activity against *S.mutans*, hence it may have potential anti-caries properties.

30 June 2006 Brisbane Convention & Exhibition Centre Exhibit Hall 1
IADR General Session & Exhibition (June 28 – July 1, 2006)

THE ULTRASTRUCTURE OF DENTIN CONDITIONED WITH CAVITY DISINFECTANTS

Author:

H.P. CHEW, and C.G. TOH, University of Malaya, Kuala Lumpur, Malaysia

Studies have shown that viable organisms remain on the dentinal surface after cavity preparation. Hence antibacterial solutions have been used after cavity preparation to disinfect affected dentin. A potential problem for use of a disinfectant with composites and dentin bonding agents is the possibility of affecting the ultrastructure of hard tissue and hence altering the seal at the resin-tooth interface.

Objective:

To investigate the influence of 2 cavity disinfectants on the ultrastructure of dentin.

Methods:

Fifteen non-carious human premolars were randomly divided into 2 test groups and 1 control group. Standardized Class II cavity was prepared on each tooth and the teeth in the test groups were treated with 32% phosphoric acid gel and cavity disinfectants Tubulicid Red Label (Dental Therapeutics AB) or Bisco Cavity Cleanser (Bisco Dental Products) respectively according to the manufacturer's recommendation. The teeth in the control group were treated with only 32% phosphoric acid gel. The samples were sectioned, washed with distilled water, dried and coated with gold for observation of the dentin surface with the scanning electron microscope.

Results:

The presence of smear layer, opening of the dentin tubules, and inter and intratubular dentin morphology was studied from the various samples. The use of the 32% phosphoric acid with Tubulicid Red Label removed the smear layer and increased the diameter of the dentin tubule openings. The use the 32% phosphoric acid with Bisco Cavity Cleanser did not remove the smear layer and deposits were observed. The use of 32% phosphoric acid only totally exposed the dentinal tubules.

Conclusions:

It is concluded that the use of Tubulicid Red Label with 32% phosphoric acid produces almost the same micromorphology as using only acid on dentin while the use of Bisco Cavity Cleanser with 32% phosphoric acid leaves the smear layer intact.

Seq #133 - Adhesive Materials: Physical, Chemical, and Mechanical

Friday, 30 June 2006 Brisbane Convention & Exhibition Centre Exhibit Hall 1

OCCLUSAL CARIES DIAGNOSIS BY A LASER FLUORESCENT SYSTEM, A SYSTEMATIC

Author:

H.P. CHEW, University of Malaya, Kuala Lumpur, Malaysia, and S. SHARIF ABDUL SHUKUR, Dental Division, Ministry of Health, Pahang, Malaysia

Recent studies have focused on carious lesions, called hidden caries, that are difficult to detect by conventional visual, tactile, and radiographic techniques. Finite, quantitative, and reliable early diagnosis of carious occlusal lesions has remained elusive.

Objective:

- i) To critically review contemporary literature on the diagnosis of occlusal caries by the laser fluorescent system - DIAGNOdent.
- ii) To analyze the diagnostic performance and reproducibility of the system in diagnosing occlusal caries.

Methods:

Searches for eligible literature were performed using the PubMed internet interface for MEDLINE covering the period between 1995-June 2003 and also by manual searches of the reference lists of retrieved articles. Dental keywords used were "occlusal caries" and "diagnosis" and "DIAGNOdent" not "secondary". 23 citations were identified and 16 were relevant. The main inclusion criteria for the study is that only in-vitro studies that benchmarked the DIAGNOdent and the visual-tactile technique with histology were chosen. In the analysis of diagnostic performance of DIAGNOdent and the visual tactile technique, specificity (spec), sensitivity (sen), log odds ratio (D), area under ROC curve and the rank correlation with histology score for D2 and D3 lesions were taken into consideration. In the analysis of intra-examiner reproducibility of these techniques, kappa values for D2 and D3 lesion were taken. Studies that compared DIAGNOdent with other diagnostic methods were excluded from this study.

Results:

Out of the 16 relevant studies identified, only 7 studies looked into the intraexaminer reproducibility while all 16 studies looked into the various diagnostic yield parameters. From these studies, it is found that DIAGNOdent has higher sensitivity but lower specificity compared to the visual tactile technique.

Conclusions:

DIAGNOdent is good to be used as an adjunct for ruling out occlusal caries. Seq #84 –

Radiological Diagnostics for Caries, Periodontal Disease
Thursday, 11 March 2004 Hawaii Convention Center Exhibit Hall 1-2

EFFECT OF HALOGEN LIGHT AND REPEATED BLEACHING ON TOOTH WHITENING

Author:

R. WONG, X.F. LING, and Y.Y. TAN, University of Malaya, Kuala Lumpur, Malaysia

Objective:

1. To assess the effect of halogen light activation on 35% hydrogen peroxide in tooth whitening. 2. To evaluate the effect of repeated bleaching cycles on the effectiveness of tooth whitening.

Materials and methods:

Fifteen matched pairs of intact freshly extracted human premolars were used. The baseline reading of each tooth shade was taken by scanning a pre-determined buccal surface using the DataFlash R 100 spectrophotometer measuring CIE L*a* b* colorimetric spaces. At the start of each bleaching cycle, 35% hydrogen peroxide solution (factory mixed) was applied onto the buccal surface for 4 seconds using a brush. Following this, for each matched pair of premolar teeth, one tooth received light activation while the other did not. The tip of the light curing unit was placed 1 mm from the buccal tooth surface and light activated for 60 seconds. Distilled water was used to wash off the bleaching solution for 15 seconds from all teeth at the end of each cycle. The spectrophotometer was used again to obtain post bleaching readings. Bleaching was repeated for each tooth 6 times under similar conditions. Color differences were measured as computation of a color difference metric called CIE ΔE^*ab . As a negative control, 3 pairs of teeth were painted with distilled water.

Results:

A Student's paired T-test analysis showed that halogen light activation significantly increased the effectiveness of tooth whitening ($p < 0.05$). Cycles 1 to 3 appeared to have the most dramatic effect on tooth whitening. After the fourth cycle, bleaching effectiveness did not increase significantly. Light activation is twice more effective than without light activation.

Conclusions:

1. Halogen light activation on 35% hydrogen peroxide solution increased the bleaching effectiveness on extracted human teeth. 2. Repeated cycles of bleaching under a halogen light will cause progressive tooth whitening until a limit is reached at the fourth bleaching cycle

Tooth Whitening

Friday, 12 March 2004 Hawaii Convention Center 318-B

IMMEDIATE AND DELAYED PULP CAPPING USING DIODE LASER

Author:

C.G. TOH¹, C.H. SIAR¹, K.N. NG², and G.E. ROMANOS³, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Institute for Medical Research, Malaysia, Kuala Lumpur, ³Dental School Frankfurt, Germany

Objectives:

To compare pulpal reactions to diode laser (Ceralas D-980, Biolitec, Germany) and calcium hydroxide (Dycal[®]) following immediate and 24-hours delayed capping of exposed pulps.

Methods:

108 teeth from 6 adult *Macaca fascicularis* monkeys were divided into 18 groups with 6 teeth per group per observation period i.e. at 7, 30 and 90 days. Class V and I cylindrical cavities were prepared in incisors and posterior teeth respectively with high speed diamonds before intentional pulp exposures were created either immediately or 24 hours before pulp capping treatment. All cavities were rinsed with 2.5% NaOCL, haemostasis assured prior to exposure to 1 sec of diode laser (600i fibre) at either 1 watt or 2 watts followed by capping with Dycal[®]. The control groups had pulp capping with Dycal[®] without any laser therapy. The teeth were then restored with a glass-ionomer restorative material (Ketac-Fil[®]). Light microscopic examination of longitudinal H&E stained sections was carried out to quantify acute and chronic inflammatory response, reparative dentin formation, presence of dentin chips, tissue necrosis and mummification. Gram stains were used to identify presence of microorganisms. Data were analyzed using Mann Whitney test to determine differences between groups at each observation period.

Results:

There were significantly more specimens with reparative dentin formation with Dycal group than laser treated groups at all 3 observation periods for both immediate and delayed capping. At 30 days delayed capping, there were significantly more dentin chips and tissue necrosis observed in the Dycal group than laser treated groups. However at 90 days this difference was not demonstrated. Conclusions: It was concluded that treatment with diode laser (with the used parameters) prior to capping with calcium hydroxide did not significantly influence the outcome of treatment. Delayed capping did not adversely affect treatment outcome. This study was supported by UM R&D Vote 40-03-02-0002.

Saturday, 13 March 2004 Hawaii Convention Center 305-A

SELECTION AND ANALYSIS OF VARIABLES FOR DISCRIMINATION OF DENTAL CASTS

Author:

R.A. OMAR, Z.M. ISA, O.M. RIJAL, and E.L. ONG, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

The aim of this study was to establish the existence of groups of dental patients, in particular three different ethnic groups in a selected Malaysian population using maxillary arch dimensions.

Methods:

Subjects with permanent, intact dentition and normal occlusion were randomly selected, comprising of 49 Malays (mean age 23.6 years), 40 Chinese (mean age 24.1 years) and 37 Indians (mean age 25.0 years). Ten dental and bony landmarks in the maxilla were used as reference points to evaluate the arches. Measurements (variables) were made directly on the casts using digimatic calipers and a profile gauge. For each of the ten variables, differences between the ethnic groups were based on the maximum, minimum, mean and standard deviation values.

Results:

Considering the univariate components separately, the results showed that there were significant differences in 4 of the variables measured: the inter-canine distance, inter-molar distance of second molars, distance between maximum buccal bone of second molars, and palatal inclination. A graphical method (the Andrews curve) whereby a multivariate observation (patient) may be represented by a sinusoidal two-dimensional curve was also used to indicate any differences among the patients. The difference between a pair of Andrews curve is equivalent to the difference between two patients when all variables are considered simultaneously. The Andrews curves of the patients showed no obvious discrimination in the maxillary arch dimensions among the three ethnic groups.

Conclusions:

i) the variables selected may/may not be adequate to reflect any differences in maxillary arch dimensions among the ethnic groups studied, ii) there is a need to reconsider the practice of using univariate statistics as opposed to the application of multivariate methods in discriminating dental arches.

Wednesday, 28 June 2006 Brisbane Convention & Exhibition Centre Exhibit Hall 1

FRACTURE RESISTANCE OF POST-RESTORED ENDODONTICALLY TREATED MAXILLARY INCISORS

Author:

N.Z. ARANDI, E. SULAIMAN, and A.A. A RAZAK, University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study evaluated the effect of shortening post length on the fracture resistance and the failure mode of endodontically treated maxillary central incisors.

Methods:

A total of 90 single rooted maxillary central incisors were decoronated 15 mm above the root apex. They were endodontically treated and randomly divided into 3 groups of 30 samples. Each group was restored using three different post systems: RelyXTM fiber post (3M/ESPE, USA), RadixTM Fiber post (Dentsply/Maillefer, USA) and ParaPost® XH (Coltène/Whaledent, USA). Each group was further divided into 3 subgroups of 10 specimens; each with a different post length (10.0, 7.5, 5.0 mm respectively). All posts were luted using RelyX Unicem resin cement, (3M/ESPE, USA). The specimens were placed in a custom jig, fixed in an Instron testing machine and loaded with a static force at a crosshead speed of 0.5 mm/min 135° to the long axis of the root until failure occurred. The load at failure and mode of failure were recorded.

Results:

One-way ANOVA test showed a significant difference in fracture resistance between the 3 subgroups restored with ParaPost system ($p=0.025$). No significant difference was found within the fiber post groups (Radix, $p=0.550$ and RelyX, $p=0.271$). Post Hoc test revealed that the 7.5mm ParaPost group had significantly higher fracture resistance than the 5mm group ($p=0.021$). Subgroups with 5mm post length displayed the highest percentage of unfavorable failure patterns (ParaPost = 80%, Radix = 50%, RelyX = 60%).

Conclusions:

Shortening post length has no significant effect on the fracture resistance of endodontically treated teeth restored with either fiber posts. The prefabricated titanium posts however, showed significantly reduced fracture resistance when shortened to 1/3 the canal length. Regardless of the post system used, roots restored with the short posts (1/3 the canal length) have a higher percentage of unfavorable root fractures.

Seq #5 - Oral Communication III : Prosthodontics/Implantology
1:30 PM-3:00 PM, Thursday, October 9, 2008

CURRENT PRACTICES OF GDPS IN DIRECT RESTORATIONS, BLEACHING AND ENDODONTICS

Author:

L.L. SEOW, A.C. GOH, and T.W. LIM, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To investigate the current practices and philosophies pertaining to direct restorative materials, bleaching and root canal treatment amongst general dental practitioners (GDPs) in the Klang Valley, Malaysia.

Methods:

A questionnaire, together with a stamped addressed envelope and an explanatory letter, was sent to 200 GDPs in the Klang Valley in June-September 2005. The GDPs were selected at random from the MDC registry. A telephone call or personal visit was made to non-respondents after 1 month.

Results:

A total of 153 (76.5%) of the GDPs responded to the survey. With regards to the trend of direct restorative materials, 46.4% of the respondents cited the use of amalgam is decreasing whereas 79.7% stated an increase in composite resin use. Clinical indication appeared to be the main factor influencing the choice of restorative materials (85.6%). Fractured restoration (77.1%) was the main reason for the replacement of amalgam restorations whilst secondary caries (73.9%) was the main reason for the replacement of composite resin restorations. Only 25.5% of GDPs surveyed would always place composite resin in load bearing areas. Supervised home bleaching was provided by 75.8% of GDPs surveyed with 62.7% providing chair side bleaching. Overall, cold lateral compaction was the most popularly used obturation technique and sodium hypochlorite was the most common endodontic irrigant (71.9%).

Conclusions:

The use of amalgam is clearly decreasing whereas composite resin is gradually gaining its popularity in the Klang Valley, Malaysia. Home bleaching rather than chair side bleaching was preferred. Cold lateral compaction was always practiced by GDPs surveyed and sodium hypochlorite was the most commonly used irrigant.

Seq #35 - Late Breaking News

1:00 PM-3:00 PM, Wednesday, 28 June 2006 Brisbane Convention & Exhibition Centre M3

INNER-CANTHAL DISTANCE AS A GUIDE FOR REPLACEMENT OF ANTERIOR TEETH

Author:

O.F. TAWFIQ, and Z.M. ISA, University of Malaya, Kuala Lumpur, Malaysia

Objective: This study investigated the relationship of the inner-canthal distance to the maxillary anterior teeth in fully dentate patients.

Methods:

Standardised full face photographs of 50 subjects viewed from the front i). with relaxed facial muscles, and ii). smiling to show the anterior teeth, were recorded with digital camera. Using image analyser software (Leica Qwin Lite Vers. 2, Leica Microsystems Imaging Solutions, Cambridge, U.K.) the images were used to determine: the interpupillary distance (IPD), the inner canthal distance (ICD) and the interalar distance (IAD). Maxillary casts of these subjects were also examined to determine the distance joining the tips of the maxillary canines in a straight line (ICS), distance between the incisive papilla and the labial surface of the maxillary central incisors (IPL), and the curved intercanine-tip distances (ICC). ICS measurements were made directly on the casts using digital callipers (Mitutoyo), and a dental tape was used to measure ICC. Using the Pythagoras theorem, the intercanine arc distance (ICA) could be calculated mathematically when ICS and IPL values were obtained, and compared to ICC.

Results:

There was no significant difference between ICD and ICS ($P > 0.05$). The mean ICD value was 34.4 ± 2.55 mm. The mean IPL was 10.1 ± 1.6 mm, and the mean ICS was 35.0 ± 1.85 mm. The mean ICC was 44.04 ± 0.31 mm, while the mean ICA value was 42.09 ± 2.23 mm. There was no significant difference between the mean ICC and ICA values ($P > 0.05$).

Conclusion:

The results show that the inner canthal distance may be used as a guide in patients requiring replacement of the anterior teeth to achieve pleasing and aesthetic outcomes.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

NATURAL FLUORIDE AND FLUOROSIS IN 14-YEAR-OLD YEMENI ADOLESCENTS

Author:

R. ABDUL KADIR, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia, and R.A. AL-MAQTARI, University Malaya, Kuala Lumpur, Malaysia

Fluoride in water has been established to be caries preventing in small doses of up to 1 ppm F. Above 2 ppm F fluorosis can develop. In a recent visit to Yemen, fluorosis was observed to be rampant among the 14 year-old subjects examined for malocclusion. An exploratory study was carried out to assess the extent of the problem.

Objectives:

To determine the prevalence of fluorosis observed in a representative sample of 14-year-old adolescents of Yemen.

Methods:

A random sample of 2,400 14-year-old Yemeni adolescents, equally distributed by gender, zone and locations participated in the study. Fluorosis was identified using photographs for Dean's Fluorosis Index downloaded at the World Health Organization website. No attempt was made to determine degree of severity of fluorosis. Photographs of identified cases were randomly taken for record purposes. Fluoride concentration from water samples at study locations were analysed.

Results:

Fluorosis was found in 30.8% of all subjects examined. Slightly more males(32.3%) than females (29.3%) were observed to have varying degrees of fluorosis. Fluorosis was also observed more among children living in rural areas(31.9%) than urban children(29.7%). None of the differences however were significant. When compared by zones, adolescents living in the south(46.9%) or east(49%) of Yemen were found to have almost two times or more with fluorosis than all other zones (North=15.2%, Central=20%, West=22.9%). The differences were found to be significant at $p=0.0001$. Fluoride concentration in natural drinking water taken from study locations was found to be between 0.2 – 3.8 ppmF.

Conclusions:

Findings from this study found fluorosis to be significant among Yemeni adolescents. A more refined and detailed national study is recommended, findings of which will be useful in the future planning to control the extent of fluorosis in Yemen.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

RELATIONSHIP OF COMPLETE DENTURE MAXILLARY INCISORS TO THE INCISIVE PAPILLA

Author:

Z.M. ISA, and L.M. ABDULHADI, University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study investigated the relationship of the maxillary central incisors to the incisive papilla in patients wearing complete dentures.

Methods:

Occlusal views of 120 maxillary casts of fully dentate subjects were recorded with digital photography. Using image analyser software (Leica Qwin Lite Vers. 2, Leica Microsystems Imaging Solutions, Cambridge, U.K.) the computer images were used to determine the distance of the labial surfaces of the maxillary central incisors to i). the midpoint of the incisive papilla (MIP) and ii). a line joining the tips of the maxillary canines (IC). Maxillary complete dentures of 31 patients who requested replacement dentures were examined. The position of the labial surface of the maxillary central incisor teeth on the dentures in relation to the midpoint of the incisive papilla (CIP) was determined using the Alma denture gauge (Asden Limited, Cheshire, U.K.).

Results:

The mean incisor to the MIP distance was 9.59 ± 1.01 mm while the mean incisor to IC distance was 9.18 ± 1.09 mm. Only in 33% of the subjects did the IC pass through the MIP. In 55% of the subjects, IC was 1.30 ± 0.78 mm. anterior to the MIP, while in the remaining subjects, IC was 1.01 ± 0.59 mm posterior to MIP. The mean CIP distance in the complete denture subjects was 6.34 ± 1.87 mm. In 55% of the complete denture patients, the maxillary central incisors were set at approximately 6 mm or less to the MIP.

Conclusion:

In the sample studied, the anterior teeth in complete dentures may not replicate the position of the natural anterior teeth as they were generally set at least 3 mm closer to the incisive papilla.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

SALIVARY PROTEINS IN SMOKERS AND NON-SMOKERS - A PRELIMINARY PROFILING STUDY

Author:

J. KALA, O.H. HASHIM, and Z.H.A. RAHIM, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The objective of this study was to employ the proteomic technology in the exploration and identification of salivary protein profile unique to smokers who were predisposed to tobacco-related oral diseases.

Method:

Twelve healthy male Malay subjects (6 smokers and 6 non-smokers of matched age groups) showing no active disease, no history of drug treatment or chemotherapy, no intra-oral inflammation and had a good oral hygiene were recruited in this experiment. Non-stimulated whole saliva was collected between 10:00 am and 11:00 am from volunteers who refrained from eating, drinking, smoking and performing oral hygiene measures for 2 hours prior to collection. Salivary proteins were precipitated using 10% trichloroacetic acid (TCA) and 20mM dithiothreitol (DTT), and dissolved in rehydration buffer and separated using two-dimensional electrophoresis (2-DE) technique. The separated proteins were analyzed, quantified, and pattern-matched between different individuals using computerized image analysis software.

Results:

It was observed that the expression of some proteins were reduced while some were higher in smokers compared to non-smokers. Carbonate dehydratase IV precursor was found to be significantly decreased ($p < 0.005$) in smokers. In addition, there was a decrease in zinc-alpha 2 glycoprotein chain D and increase in Ig kappa light chains and polymeric Ig receptor precursor though not statistically significant. No difference was observed in the expression of amylase and albumin in these two groups of subjects.

Conclusion:

The profile of the salivary proteins in smokers appeared to be different from non smokers. This project is funded by the following grants: FRGS (FQ003/2007A) and PPP (PS105/2008A)

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

PERIODONTAL SCREENING AND PRACTICES AMONG GOVERNMENT DENTISTS IN MALAYSIA

Author:

R.D. VAITHILINGAM¹, R. RAMAN², Y.Y. SIOW³, and W.N.W. HASSAN¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Ministry of Health, Penang, Malaysia, ³Ministry of Health, Negeri Sembilan, Malaysia

Objectives:

To identify the frequency of periodontal screening, knowledge of basic periodontal examination (BPE) and management of periodontal diseases (PDs) among government dentists in the states of Negeri Sembilan and Penang, Malaysia.

Methods:

This cross-sectional study, done as a self-administered postal questionnaire, was distributed to 120 government dentists in these two states. 117 (97.5%) questionnaires were returned. 82.1% respondents were females as compared to 17.9% males. Questions asked were about frequency of periodontal screening, knowledge of BPE, management of periodontal abscesses and referrals to the periodontists.

Results:

55.6% dentists screened for PDs routinely, 35.9% when they had the time and 8.5% never or very rarely screen. 62.4% of the subjects were very familiar with BPE. Of these, 10.9% used it frequently while 67.1% used it when necessary. There was significant association between knowledge of BPE and number of years since graduation ($p < 0.05$). To manage periodontal abscesses, 83.8% dentists would do deep scaling on the affected teeth, 62.4% take radiographs and 88.9% would prescribe antibiotics. Taking radiographs showed significant association with number of years since graduation ($p < 0.05$). Within the past 6 months, 43.6% dentists made referrals to periodontists. 82.3% had referred for Chronic Periodontitis, 43.1% for Aggressive Periodontitis and 51% for PDs secondary to systemic conditions. 56.9% respondents who did not refer were able to manage the disease.

Conclusion:

In this study, only slightly more than half of government dentists routinely screen for PDs. Younger graduates had better BPE knowledge and were more likely to take radiographs for periodontal abscess management as compared to their seniors. Antibiotics were widely prescribed by dentists to treat periodontal abscesses. The majority of referrals were for Chronic Periodontitis.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

EFFECT OF PPE ON THE ADHERING PROPERTY OF STREP. MUTANS

Author:

N. THURAIRAJAH, University College Sedaya International (UCSI), Kuala Lumpur, Malaysia, and Z.H.A. RAHIM, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

The purpose of this study was to investigate the effect of PPE (partially purified *Piper betle* L. leaves extract) on i) the sucrose dependent adherence of *Streptococcus mutans* (*Strep. mutans*) ATCC 25175. ii) cell-surface hydrophobicity and iii) the cell-associated glucosyltransferase (CAG) activity.

Methods:

PPE was extracted from the crude aqueous extract of *Piper betle* leaves using ethanol. The effect of PPE on the adhering property of *Strep. mutans* on the glass surface in the presence of BHI broth and sucrose was determined by comparing the ratio of adhered cells to free cells. The effect of PPE on the cell- surface hydrophobicity of the bacteria was also investigated. The glucan formation was investigated by measuring the CAG activity in the absence and presence of PPE via the amount of water-insoluble glucan formed. Results: It was shown that PPE has inhibitory effect on the adhering property of *Strep. mutans*. It was observed that 33.33 ± 3.25 % inhibition was obtained at a concentration of 1 mg/ml and at 2 mg/ml, the PPE exhibited almost 50% inhibition (45.69 ± 1.07 %). In the presence of 1 mg/ml of PPE, the cell-surface hydrophobicity was reduced to 22.12 %. At 3 mg/ml, the cell-surface hydrophobicity was reduced by 62 %. When the concentration of PPE was increased, its inhibitory effect towards CAG increases. The inhibitory effect was almost 50 % at 0.75 mg/ml. At 1.0 mg/ml of the PPE, almost 60 % reduction of the CAG activity was observed.

Conclusion:

PPE reduces the adhering property of *Streptococcus mutans* and glucan formation. This suggests that it may have a potential role in the control of dental plaque formation and subsequently, dental caries formation.

Back to the 22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

INFLUENCE OF ROOT CANAL INSTRUMENTS ON PRIMARY MOLARS' CANAL PREPARATION

Author:

J. BAHADUN, Ministry of Health, Malaysia, Kuching, Sarawak, Malaysia, and N.N. NIK HUSSEIN, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To investigate the percentage of dentine thickness removed from root canal of primary molars after preparation using three instrumentation techniques. The time taken for canal preparation was also investigated.

Methods:

Forty-five human primary molars were selected and randomly divided into 3 groups i.e. stainless steel hand instruments (K- Flexofile)(Dentsply Maillefer, Ballaigues, Switzerland), nickel-titanium hand instruments (NiTiFlex)(Dentsply Maillefer, Ballaigues, Switzerland) and nickel-titanium rotary instruments (Profile)(Dentsply Maillefer, Ballaigues, Switzerland). Only one root was chosen from each tooth. Pre-instrumentation radiograph for each specimen was taken with VitapexTM as contrast medium using a special radiographic platform. Each group was prepared by one of the instrumentation techniques mentioned above. On completion of instrumentation, canal was again filled with VitapexTM and post-instrumentation radiograph was then taken. Pre- and post-instrumentation images were traced from the radiographs. Measurement of dentine thickness removed was carried out by superimposition of the tracings using the image analyser.

Results:

There is a significant difference in dentine thickness removed at the inner curve ($p=0.043$) between the stainless-steel hand and rotary groups, and for the outer curve ($p=0.048$) between the nickel-titanium hand instruments and rotary group (Kruskall-Wallis test). There is also significant difference ($p=0.042$) of the mean time taken for canal preparation between the stainless -steel hand instrumentation and rotary groups.

Conclusion:

Instrumentation techniques affected the dentine thickness removed and the time taken for canal preparations.

Seq #146 - Instrumentation in Endodontics and Biomechanical Aspect of Endodontically Treated Teeth

Friday, July 4, 2008 Metro Toronto Convention Centre Room 809

TREATMENT CONCEPTS AND CURRENT PRACTICES OF RESTORING ENDODONTICALLY TREATED TEETH

Author:

N.H. MOHAMED, University of Malaya, Kuala Lumpur, Malaysia, M.A. ABDUL RAZAK, Oral Health Division, Ministry of Health, Kota Kinabalu, Malaysia, and M.F. USOFF, Oral Health Division, Ministry of Health, Melaka, Malaysia

Objectives:

To investigate the treatment concepts and current practices of restoring endodontically treated teeth (ETT) among dental practitioners in Klang Valley, Malaysia.

Methods:

This is a cross-sectional study using convenient sample of 101 dental practitioners in Klang Valley. An open and pre-tested questionnaire was used as the study instrument. Variables measured were grouped under the headings of the sample background, treatment concepts and current practices. Data were analyzed using the SPSS version 15.0.

Results:

82.2% of respondents from various background and experience do not believe that every ETT must receive a post. Majority of them (59.4%) also believe that a post do not reinforce ETT or reduces the fracture probability. Most frequent type of post used are prefabricated post (60.4%) followed by cast post (34.7%). Titanium alloys (42.6%) are the material of choice while parallel sided (41.6%) are the most popular type for prefabricated post. Composite resin (62.4%) is preferred for core foundation and posts are placed primarily with glass ionomer cements (41.6%). The most frequent failure of ETT encountered by respondents is loss of retention (31.7%).

Conclusions:

Knowledge, experiences and availability of advance materials influence the concepts, technique and choice of materials for restoring endodontically treated teeth.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

GENE EXPRESSION PROFILES OF ORAL CANCERS WITH DIFFERING AETIOLOGICAL FACTORS

Author:

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Introduction:

The aetiology of oral cancer development is well-established. Smoking and alcohol consumption is considered the main causative factor for oral cancer in the west, whereas betel quid (BQ) chewing is predominant in South and Southeast Asia. Notably, analyses of specific genes and pathways suggest that distinct molecular mechanisms contribute to the development of oral cancer when initiated by different aetiological factors. This has important implications as these genetic changes may serve as molecular signatures which will form the basis for future diagnostic and therapeutic strategies.

Objectives:

We seek to determine gene expression profiles of smoking- and BQ-associated oral cancers, and to identify the differences in gene expression patterns between these cancers. Methods: Microarray experiments on Affymetrix high-density oligonucleotide arrays were performed on 17 specimens. Five matched specimens were obtained from patients with BQ chewing habits while 7 specimens were obtained from individuals who smoke (4tumours, 3normals). The panel of genes found to be significantly altered in either group ($P < 0.05$) was compared, to investigate the differences in gene expression profiles between the 2 groups.

Results:

Principle component analysis (PCA) of the microarray data demonstrated that oral cancers associated with smoking and BQ chewing could be grouped based on their global gene expression profiles. 168 genes were found to differ by at least 2-fold between the 2 groups. Genes identified as differentially expressed include TGF α , ITGB4, CDKL-3, TSP50, MAPK9, VAV-2 and ADAM8. mRNA expression of 3 genes (TGF α , ITGB4 and TSP50) was further validated using qPCR.

Conclusions:

We demonstrated that the gene expression profiles of oral cancers associated with tobacco smoking differed from those associated with BQ chewing suggesting that different carcinogens may activate or inhibit specific pathways. Therefore differences induced by distinct aetiological factors should be taken into consideration when developing biomarkers for future use in prognostication or therapeutic applications.

TISSUE RESPONSE TO POLYHYDROXYBUTYRATE (PHB) IMPLANTATION IN THE RABBIT MANDIBLE

Author:

C.H. SIAR, N.I.H. ABDUL RAHIM, S.T. ONG, S.P.L. KOH, and I.K.P. TAN, University of Malaya, Kuala Lumpur, Malaysia

Statement of the problem:

Naturally-occurring polyesters namely polyhydroxyalkanoates (PHA), have gained considerable research interest because of their wide potential industrial and medical applications. However, comparatively little is known of studies exploring its therapeutic or surgical use in the jawbones.

Objective:

To determine tissue response to one type of PHA, polyhydroxybutyrate (PHB) implanted in the rabbit mandible.

Materials and methods:

Nine adult female New Zealand white rabbits, 10-12 months old, weighing 2.8 to 3.3kg were used [Ethics Number: PM/20/06/2006/NIH (R)]. A full thickness bone defect of critical size 15mm x 10mm was created bilaterally in the ramus of the mandible. The bony defects were randomly divided into test sample (filled with PHB granules, Sigma Aldrich Co., Germany), positive (autogenous bone) and negative control (empty). At 12 weeks the specimens were harvested, fixed in 4% buffered paraformaldehyde solution and processed for histomorphometry.

Results:

Mean bone volume (MBV) percentages (%) between test (31.67 ± 11.34) and positive control (42.5 ± 10.43) was not statistically significant. However, MBV % between test and negative control (5.67 ± 5.39) was highly significant ($p < 0.0002$). The bony defects in test and positive control were lined by new bone whereas fibrous connective tissues mostly lined these defects in the negative control group.

Conclusions:

Findings suggest that PHB shows osteopromotive properties within an osseous environment and therefore has potential use as a bone regenerative material. [Malaysia eScience Grant: 02-01-03-SF0344].

COMPARISON OF FACIAL MEASUREMENTS AMONG THREE MALAYSIAN ETHNIC GROUPS

Author:

W.C. NGEOW, and S.T. AL-JUNID, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

This study was done to establish the quantitative norms and proportion indices of the face for the three major ethnic groups in Malaysia, namely the Malay, Chinese and Indians.

Methods:

The study group consisted of convenient samples with a total of 100 participants in each group and an equal number of female and male subjects. The age ranged from 18 to 25 years. The participants were generally healthy and exhibited no craniofacial abnormalities and had no history of plastic or reconstructive surgery. Subjects of mixed parentage were excluded from this study. Standard anthropometry instruments and methods were employed.

Results:

The facial index (facial length/breadth x100) was between 83 and 86 in all the three groups, indicating a mesoprosop-type face. Classically this is categorised as a short and broad face. The mean upper face index was between 53 and 55 in the whole sample indicating a mesen or medial type upper face. The Malay generally had the widest upper face. The lower face to face height index also indicated a more balanced relationship between the two measurements and was seen in all three races.

Conclusion:

The Malays and Chinese have more similar facial features than the Indians.

Wednesday, September 10, 2008 Queen Elizabeth II Conference Centre Poster Hall 2
Pan European Federation of the International Association for Dental Research (September 10-12, 2008)

PREVALENCE OF HPV IN ORAL SQUAMOUS CELL CARCINOMAS AFFECTING MALAYSIANS

Author:

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Human Papillomavirus (HPV) has been implicated in the progression of anogenital carcinomas but their involvement in the initiation and progression of oral neoplasia has generated conflicting results

Objectives:

To investigate the prevalence of HPVs in Oral Squamous Cell Carcinomas (OSCCs) affecting Malaysian population and to identify different types of High risk and Low risk HPVs in OSCCs.

Methods:

One hundred and five fresh frozen OSCC samples were used in this study. In addition, buccal swabs from 105 healthy individuals were taken as controls. Two-tube nested PCR with degenerate primers pairs MY 9/11 followed by GP5+/GP6+, was performed to amplify a segment of gene from the L1 region of the virus. The outer MY primer set amplified approximately 450 bp while the internal GP primers generate an approximately 140 bp long fragment within the sequence amplified by the outer primer pair. DNA sequencing was performed to identify the HPV type.

Results:

HPV DNA was detected in 54 of the 105 OSCC samples (51.4 %). Of the 54 samples, two third (66%) were found to have high risk HPVs while the remaining were found to have low risk HPVs. Smoking, alcohol abuse, tobacco chewing, clinical stage, tumour grade, and tumour-node-metastasis status were not associated with HPV presence ($P > 0.05$). In contrast, from 105 normal individuals, 26 (24.8%) were positive for HPV. Out of the 26 positive samples, 76% had low risk HPVs. The prevalence of HPV and its association with age, gender, smoking habits, tobacco or alcohol use were statistically not significant ($P > 0.05$).

Conclusion:

Our study suggests HPV is associated with OSCCs although HPV may be present in the oral cavity in healthy individuals as well. Hence early screening for this virus may help to prevent HPV-associated diseases, such as oral cancer and other oral lesions, which may develop later.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

COMPARATIVE STUDY OF BUCCAL CELLS COLLECTION PROTOCOLS FOR DNA EXTRACTION

Author:

G.H. KHOR¹, B.P. LOW¹, M.S. MOHD SAID¹, R.B. ZAIN², M.I. ABU HASSAN¹, H.B. SAID GULAM KHAN¹, R. AHMAD¹, L.T. YOUNIS¹, and N. NORDIN¹, ¹Universiti Teknologi MARA, Shah Alam, Malaysia, ²Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To evaluate the efficiency of different methods for buccal cells collection protocols for DNA extraction.

Methods:

The different buccal cells collection protocols were assessed and compared for DNA extraction assay by geneMAG-DNA/saliva Collection Kit (Chemicell, Germany). First protocol is saliva collection method with passive drool technique. Second protocol is which collection method using normal saline, and third protocol is buccal swab method. The experiments were carried out in triplicates. The washed pellets from different protocols were suspended in TE buffer and analyzed for the quality and purity of DNA content by using the NanoDrop Spectrophotometer. The purity of extracted DNA then checked with wavelength of 260 and 280 nm. A ratio of A260/A280 was calculated. The presence of extracted DNA was then confirmed by electrophoresing process, the DNA bands were scanned by Typhoon 9410 variable imager.

Results:

In this study, the yield and quality of extracted DNA of buccal cells by using the saliva, swish and buccal swabs collection methods were compared. There was no statistically significance different in higher yield from the swish collection compared with the buccal swab collection method (26.7 .ig/.il versus 22.4 .ig/.il, respectively; P = 0.133). However in DNA purity checking, there was a significant difference in the swish collection compared with the saliva collection method (1.94 O.D versus 2.09 O.D respectively; P = 0.0208). Moreover, the DNA bands that stained in electrophoresis gel demonstrated clearer and stronger bands in the swish collection method compared with another two methods.

Conclusion:

The results obtained demonstrated that the swish collection method showed the better yields and higher purity of extracted DNA of buccal cells. Thus, the swish collection method will be applied in sample collection for down-stream DNA identification application in our study.

Friday, October 10, 2008

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

GENETIC POLYMORPHISM OF CYP1A1, GSTM1 AND GSTT1 GENES IN MALAYSIANS

Author:

R.B. ZAIN¹, R.J. RAJA LATIFAH¹, S.C. CHEONG², A.S. ATIYA¹, W.M.N. WAN-GHANI¹, I.A. RAZAK¹, S. HAMID², S.M. ISMAIL¹, M.T. ABRAHAM³, W.M. WAN-MAHADZIR³, N. JALIL³, K.K. TAY³, and K.M. YUEN³, ¹Oral Cancer Research and Co-ordinating Centre, University of Malaya, Kuala Lumpur, Malaysia, ²Cancer Research Initiatives Foundation (CARIF), Subang Jaya, Malaysia, ³Ministry of Health Malaysia, Kuala Lumpur, Malaysia

Genetic polymorphisms in xenobiotic enzymes such as CYP1A1, GSTM1 and GSTT1 have been reported to increase cancer risk.

Objectives:

This study was undertaken to establish whether genetic polymorphism in each of CYP1A1, GSTM1 and GSTT1 genes is associated with incidence of oral cancer.

Methods:

An unmatched case-control study was conducted using 84 newly diagnosed oral cancer patients and 87 non-cancer subjects selected from the same locations as cases. Peripheral blood was obtained from consented individuals and the CYP1A1, GSTM1 and GSTT1 genotypes were determined using PCR and restriction enzyme digestion. In this preliminary analysis Chi-square and stratified analysis were used to estimate the likelihood of genetic polymorphism among cases and controls.

Results:

In comparing cases and controls for GSTM1 null genotype, the crude OR (95% CL) was 0.94 (0.51, 1.71); adjusted for smoking was 1.05 (0.57, 1.94); adjusted for drinking was 0.72 (0.38, 1.37); and adjusted for chewing was 1.15 (0.58, 2.28). Similarly, for GSTT1 null genotype, crude OR was 0.67 (0.36, 1.25); adjusted for smoking was 0.70 (0.37, 1.33); adjusted for drinking was 0.62 (0.32, 1.22); and adjusted for chewing was 0.72 (0.35, 1.47). For CYP1A1 polymorphism, crude OR was 1.03 (0.57, 1.89); adjusted for smoking was 1.17 (0.63, 2.17); adjusted for drinking was 0.77 (0.40, 1.47); and adjusted for chewing was 1.03 (0.52, 2.04).

Conclusions:

Preliminary analysis showed a lack of evidence to support the association between incidence of oral cancer and genetic polymorphism of GSMT1, GSTT1 and CPY1A1. Further analysis will be conducted using multivariate techniques.

30 June 2006 Brisbane Convention & Exhibition Centre Exhibit
Hall 1 IADR General Session & Exhibition (June 28 – July 1, 2006)

ANTIBACTERIAL EFFECT OF CHLORINE DIOXIDE AND HYALURONATE ON DENTAL BIOFILM

Author:

T. TAIYEB-ALI, F. HASHIM, F. AL-BAYATY, and M.A. ABDULLA, University of Malaysia, Kuala Lumpur, Malaysia

Objective:

to investigate antimicrobial action of Chlorine Dioxide(ClO₂) gel and Hyaluronate gel (Gengigel[®]) on dental biofilm.

Methods:

Pooled supra and subgingival dental biofilm were obtained from healthy individuals and incubated aerobically and anaerobically. Plaque bacteria investigated included *Streptococcus constellatus*, *Streptococcus mitis*, *Eikenella corrodens*, *Fusobacterium nucleatum*, dental plaque pool samples (aerobic and anaerobic) and *Staphylococcus aureus* and *Escherichia coli* as internal control microorganisms. All bacteria were grown in Brain Heart Infusion(BHI) broth and the clinical isolate strains were sub-cultured on BHI agar. Single pure colonies of bacteria were transferred into fresh BHI broth and incubated overnight. Bacterial counting was done using Hemocytometer. Antibacterial activities were determined using bacteria grown on Mueller Hinton II agar and antimicrobial disc diffusion susceptibility testing with paper discs impregnated with ClO₂ and Hyaluronate gels as well as by Minimum Inhibition Concentration(MIC) test. Bacterial morphological alterations following treatment with ClO₂ and Hyaluronate gels were viewed under Scanning Electron Microscope (SEM) at 3500x, 10000x and 20000x magnification.

Results:

Positive results were obtained with Disc Diffusion Technique whereby both agents exhibited antibacterial action against the microorganisms tested. ClO₂ gel produced large diameter inhibition zones while Hyaluronate gel resulted in smaller diameter inhibition zones. In MIC test the lowest MIC value of chlorine dioxide gel (0.02% w/v) was obtained for *S. aureus*, *S. mitis* and *S. constellatus*. The other bacteria and pool samples of dental biofilm indicated slightly higher MIC values (0.2% w/v) for ClO₂ gel. However, MIC values for Hyaluronate gel could not be determined. Under SEM ClO₂ gel produced obvious alterations to the bacterial morphology while no changes were observed after treatment with Hyaluronate gel.

Conclusion:

Chlorine dioxide gel demonstrated stronger and obvious antibacterial activity. (Supported by Vote F0178/2007a, University of Malaya)

July 3, 2008 Metro Toronto Convention Centre Exhibit Hall D-E
IADR 86th General Session & Exhibition

CUTTING EFFICIENCY OF DENTAL BURS - A PILOT STUDY

Author:

A. ABDUL AZIZ, N.H. ABU KASIM, M.Y.P. MOHAMAD YUSOF, and M. PAIZI, Department of Conservative Dentistry, Kuala Lumpur, Malaysia

Objectives:

This study aim to evaluate the cutting efficiency of tungsten carbide burs (TC) and rotary diamond instruments by measuring their rake angle and visual examination of their cutting surfaces respectively, using scanning electron microscopy (SEM).

Materials and Method:

60 short and long head pear-shaped TC and 18 round rotary diamond instruments that had been used to prepare < than 5, > than 5 and > than 10 cavities were selected from the 3rd & 4th year dental students, Dental Faculty, University of Malaya. 12 cylindrical and flame rotary diamond instruments were also selected from the 5th year students. The rake angle of TC was measured and surfaces of diamond instruments were evaluated using Field Emission Scanning Electron Microscope (FESEM). Each test group comprised of 10 samples and new burs constituted the control group. The data were analysed descriptively and statistically using Two-way ANOVA, SPSS version 12.

Results:

The rake angles of control, < than 5 and > than 5 groups were significantly higher compared to > than 10 groups, $p < .05$. Rotary diamond instruments used to prepare < than 5 cavities showed intact diamond particles with distinct cutting facets comparable to control group. Instruments used to prepare > than 10 teeth showed blunt and dislodged diamond particles.

Conclusions:

The rake angle of TC is significantly lower and diamond instruments showed blunt diamond particles after cutting > than 10 preparations.

22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

FLEXURAL STRENGTH OF NEW ALL-CERAMIC CORE MATERIAL

Author:

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Objectives:

The objective of this study was to compare the biaxial flexural strength of the new all-ceramic material Turkom-Cera compared to two other all-ceramic systems.

Methods:

Three groups of 10 disc specimens (16 mm diameter x 1.2mm thickness — in accordance with ISO-6872, 1995) were made from the following ceramic materials: Turkom-Cera Fused Alumina (Turkom-Ceramic (M) Sdn. Bhd., Kuala Lumpur Malaysia), In-Ceram (Vita Zahnfabrik, Bad Sackingen, Germany) and Vitadur-N (Vita Zahnfabrik, Bad Sackingen, Germany), which were sintered according to manufacturer's recommendations. All specimens were subjected to biaxial flexural strength test using the Instron Universal Testing Machine at a cross-head speed of 0.5 mm/min. The definitive fracture load was recorded for each specimen and the biaxial flexural strength was calculated from an equation in accordance with ISO-6872.

Results:

The data were statistically analyzed via Dunnett's T3 post-hoc test ($p < 0.05$). The mean biaxial flexural strengths were: Turkom-Cera (506.8 ± 87.01 MPa), In-Ceram (347.4 ± 28.83 MPa) and Vitadur-N (128.7 ± 12.72 MPa). There was statistically significant difference between the three core ceramics. Turkom-Cera showed the highest biaxial flexural strength, whereas Vitadur-N the lowest and In-Ceram in between.

Conclusion:

The results of this study are important to both dentists and technicians in order to select the most appropriate all-ceramic system. Turkom-Cera core has significantly higher flexural strength than In-Ceram and Vitadur-N ceramic core materials.

This study was supported by IPPP; University of Malaya, Kuala Lumpur, Malaysia. Account no: P0197/2006C.

July 4, 2008 Metro Toronto Convention Centre Exhibit Hall D-E
Dental Materials 3: Ceramic-based Materials and Cements Program
Back to the IADR 86th General Session & Exhibition

VERTICAL DISPLACEMENT OF DISTAL EXTENSION RIDGES BY DIFFERENT IMPRESSION TECHNIQUES

Author:

O. NABEEL, S.F. AHMAD, and Y.T. ARIFFIN, University of Malaya, Kuala Lumpur, Malaysia

Objective: To compare the vertical displacement of distal extension ridges of three impression techniques using polyvinyl siloxane (PVS) regular body impression material with irreversible hydrocolloid impression as control.

Method: Eleven subjects participated in the study. Cast produced of the irreversible hydrocolloid impression taken with special tray of each patient was used as a control (A). The second impression technique (M) and third impression technique(C) were taken with PVS regular body using special tray, which used modeling wax and casting wax as spacer at edentulous area respectively. The fourth impression was altered cast technique (ACT). Three standardized areas were identified on each ridge, the left (L) and right (R) side; 5mm distal to the last abutment tooth (1), midway between L1 and the centre of the retromolar pad (2), and central of the retromolar pad (3). Three standardized points of each area were measured using the Digimatic indicator (Mitutoyo, Japan) on the casts and comparisons on the displacement were made with the control cast (the measurements were in millimetres). Data were analysed with paired t-test and Wilcoxon signed-rank test.

Results: The mean differences (MDs) of the mucosal vertical displacement between impressions were:

	MD(L)	MD(R)
A1-M1	-0.323	-0.224
A2-M2	-0.326	-0.253
A3-M3	-0.254	-0.321
A1-C1	-0.041	-0.157
A2-C2	-0.012	0.120
A3-C3	0.067	0.491
A1-ACT1	-0.265	0.020
A2-ACT2	-0.054	0.166
A3-ACT3	-0.043	0.074

The greatest MD for each area was in M1, M2, M3 for both L and R. However, they were not significant ($P>0.05$).

Conclusion: Even though there were differences in the displacement of the mucosa using different impression techniques, they were small and not significant. This may indicate that the control is comparable to the M, C and ACT according to the mucosal vertical displacement. (Supported by vote P0213/2007A, University of Malaya).

Scientific Groups Program

Back to the 22nd International Association for Dental Research (SEA Division) & 19th South East Asia Association for Dental Education (October 8-10, 2008)

PROTEOMIC ANALYSIS OF WHOLE SALIVA FROM PATIENTS WITH ORAL CANCER

Author:

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Objective:

The objective of this study was to compare the protein profiles of unstimulated whole saliva from patients with oral cancer with those of healthy control subjects using two-dimensional gel electrophoresis (2-DE).

Methods:

Four patients with oral cancer and four healthy subjects of matching age and sex were recruited in this study. Their unstimulated whole saliva, collected by spitting, was concentrated using TCA precipitation, dissolved in rehydration buffer and subjected to 2-DE separation. The separated proteins were analyzed, quantified and pattern-matched between individuals using computerized image analysis software. Identification of the proteins was performed by spot-pattern comparison with the previously established normal human unstimulated whole saliva proteome.

Results:

Our results demonstrated five unidentified protein spots that were exclusively detected in the 2-DE profiles of the patients' whole saliva. Among the proteins that were commonly present in the normal human whole saliva proteome, cystatin A, cystatin S and cystatin SA were not detected in the 2-DE profile of one of the oral cancer patients. Analysis of spot volumes of the proteins that were secreted in the unstimulated whole saliva showed the enhanced secretion of alpha 1-antitrypsin, C3 complement precursor, transthyretin and actin cytoplasmic 2, and reduced secretion of zinc alpha2-glycoprotein (1 isoform), parotid secretory protein, carbonic anhydrase VI and cystatin S in patients with oral cancer compared to those of the controls.

Conclusion:

Proteomics analysis of the unstimulated whole saliva of patients with oral cancer showed presence of unidentified proteins that were not normally secreted in the unstimulated whole saliva of healthy controls. Eight proteins that were commonly detected in the unstimulated whole saliva of healthy controls were also found to be aberrantly secreted by the patients.

THE ADHERING CAPACITY OF SINGLE- AND MIXED-SPECIES BACTERIA

Author:

Z.H.A. RAHIM, H. WAN NORDINI, and F. ABDUL RAZAK, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

The objective of the study was to investigate and compare the adhering capacity of single- and mixed-species bacteria to an experimental pellicle.

Methods:

A known population of oral bacteria (*Strep. mitis*, *Strep. sanguinis* and *Actinomyces* sp.) either as single- or mixed-species was allowed to adhere to the experimental pellicle of biofilm developed in an artificial mouth (NAM) model. The bacterial population (single- or mixed-species) adhering to the experimental pellicle was determined and expressed as colony forming unit (CFU/ml).

Results:

It was found that for the single-species biofilm, *Strep. mitis* demonstrated maximum adherence ($1153.33 \pm 132.46 \times 10^4$ CFU/ml), followed by *Strep. sanguinis* ($183.00 \pm 10.33 \times 10^4$ CFU/ml) and by *Actinomyces* sp. ($42.33 \pm 3.20 \times 10^4$ CFU/ml). The adherence of the bacteria was found to be reduced when a mixture of two-species instead of single-species was inoculated. Maximum adherence was observed with a two mixed-species of *Strep. mitis* - *Strep. sanguinis* ($186.17 \pm 5.27 \times 10^4$ CFU/ml), of *Strep. mitis* - *Actinomyces* sp. ($148.00 \pm 7.43 \times 10^4$ CFU/ml) and of *Strep. sanguinis* - *Actinomyces* sp. ($95.00 \pm 2.45 \times 10^4$ CFU/ml). However, it was found that when the three species are together (*Strep. mitis* - *Strep. sanguinis* - *Actinomyces* sp.) in the development of the biofilm, the bacterial adherence was higher ($208.33 \pm 25.85 \times 10^4$ CFU/ml) compared to when they are present in a mixture of any two species. The difference in the adherence capacity of these bacteria to the experimental pellicle was found to be statistically significant ($p < 0.05$).

Conclusion:

The results obtained in this study indicate that the adhering capacity of the bacteria to the experimental pellicle is species dependent and is very much influenced by the types of bacteria present in the inoculum.

This study was funded by IRPA Grant No 09-02-03-0197 EA 197.

July 3, 2008 Metro Toronto Convention Centre Exhibit Hall D-E

EFFECT OF ENVIRONMENTAL PRESSURE CHANGES ON MICROLEAKAGE TO RESTORATIVE MATERIALS

Author:

W.A. ANNUAR, Malaysian Armed Forces Dental Services (MAFDS), Kuching, Sarawak, Malaysia, A.A.A. RAZAK, University Of Malaya, Kuala Lumpur, Malaysia, and A.B. YUSOF, Malaysian Armed Forces Medical Services, Lumut, Perak, Malaysia

Objectives:

To determine and compare the effect of environmental pressure changes during diving to the various types of restorative materials on microleakage.

Methods:

Eighty conventional Class V cavities with the incisal and gingival margins in enamel were prepared in bovine incisor teeth. Teeth were randomly divided into four groups. Each group of twenty was randomly divided into two groups of ten, one group to act as control and the other as experimental. The restorative materials used were FilteksTM Z250 (3M Espe), FilteksTM P60 (3M Espe), Ketac MolarTM (3M Espe), Amalgam (DispersalloyTM, Dentsply). Each experimental specimen was subjected to thirty compressions cycle over a range of 0 to 50metre sea water depth (MSW) at a rate of 10meter per-minute in the hyperbaric chamber (Drass Galeazzi, Manufacturer). The chamber was held at 50metre sea water depth (MSW) for 5 minutes, and then decompressed over a 5 minute period. After the compressions cycle, the specimens were then immersed in 10% methylene blue for 24 hours at room temperature. The teeth were sectioned bucco-palatally at the mid line of the restoration. The site and degree of leakage of each section was scored using a scoring system under a stereomicroscope 15 times of magnifications.

Results:

There is a significant difference in leakage extent (Chi-Square Test, $p=0.001$), between Ketac Molar experimental and control group.

Conclusion:

Environmental pressure changes affected the microleakage of the cavities restored with Ketac MolarTM (3M Espe). Other restorations used in this study appeared to be unaffected by environmental pressure changes.

Thursday, July 3, 2008 Metro Toronto Convention Centre Exhibit Hall D-
E Dental Materials 2: Adhesion - Leakage/Margin Assessments Program
Back to the IADR 86th General Session & Exhibition

RAPID WHOLE GENOME AMPLIFICATION FOR ORAL RINSE

Author:

G.H. KHOR, Faculty of Dentistry, University Teknologi MARA, Shah Alam, Malaysia, K.L. THONG, Institute of Post Graduate, University of Malaya, Kuala Lumpur, Malaysia, G.R.A. FROEMMING, Institute for Medical Molecular Biotechnology, Faculty of Medicine, Shah Alam, Malaysia, and R.B. ZAIN, Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia

Introduction:

Genomic DNA is normally obtained from blood, swabs brushes, and scraping of buccal cells are sources of genomic DNA for molecular analyses. Therefore, less invasive and more cost-efficient procedures for collecting genomic DNA are needed for a large epidemiological study.

Objective:

The study described a rapid method for obtaining the high-quality whole genomic DNA from buccal cells in the oral rinses of patients. Such approach has high acceptability and allows for a large number of PCR assays from a single sample.

Method:

In this study, twenty-two subjects vigorously swished their mouth with normal saline and expelled the oral rinse into a centrifuge tube. Then, DNA was isolated from all exfoliated buccal cells in the oral rinse samples by using saliva DNA isolation kit (Norgen, USA). The quality and purity of extracted DNA were analyzed by using NanoDrop Spectrophotometer. The extracted DNA was amplified for p53 genes using exon 4 as a primer. The presence of PCR products were identified by bioanalyzer and electrophoresis gel. The PCR bands in the electrophoresis gel were scanned by Image Analyser.

Result:

The average yield of extracted DNA was 27 ng/µl. The electrophoretic analysis of the extracted DNA showed clear and detectable levels of high molecular weight genomic DNA.

Conclusion:

DNA from the exfoliated buccal cells in the oral rinsed samples was successfully extracted in this study. The results also indicated that this procedure may be suitable for large population's study in which oral rinse sample can be collected easily from the subjects and stored for months prior DNA molecular applications.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

BOND STRENGTHS OF SOFT-LINERS TO CHEMICALLY DIFFERENT DENTURE BASE POLYMERS

Author:

O.H. BAYATI, International Medical University (IMU), Kuala Lumpur, Malaysia, S. AHMAD, University of Malaya, Kuala Lumpur, Malaysia, and N. YUNUS, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To compare tensile bond strengths (TBS) of four silicone soft liners to two chemically different denture base polymers (PMMA and UDMA).

Methods:

Four silicone soft liners (GC Soft(GS), GC Extrasoft (GXS), Silagum Comfort (SC) and Mollosil Plus (MP)) were processed to PMMA (IMPACT, Dental exports of London, England) and UDMA (ECLIPSE, DENTSPLY, USA) denture base polymers following the manufacturers' recommended relining method. For each soft liner-denture base combination group, 10 specimens were prepared using a custom-made brass mould. The bonding area was 10 mm in diameter and 3mm in thickness. The specimens were stored in distilled water (37°C) for 24 hours before testing. The specimens were tested for TBS using universal testing machine (Shimadzu, Japan) and mode of failure was determined using stereomicroscope at X 10 magnification (Kyowa SD-2PL, Japan). Data were analyzed using Kruskal-Wallis and Mann-Whitney tests.

Results:

For PMMA group, there were significant differences in TBS amongst soft lining materials ($p < 0.05$), except, between GS (1.94 MPa) and GXS (2.04 MPa). While, in UDMA group, there was non-significant difference in TBS between all soft liners except, for MP which showed significant lower TBS (0.08 MPa). All soft lining materials showed a significantly higher TBS to PMMA than to UDMA ($p < 0.05$), except for SC which showed no significant difference ($P > 0.05$). The mixed mode of failure was the most common in PMMA group. While, Adhesive mode of failure was the most common in UDMA group, except for Silagum Comfort was mostly adhesive in both groups.

Conclusions:

The silicone soft liners showed different TBS when used to reline PMMA compared when relined UDMA denture base polymer. Soft lining materials showed lower TBS to UDMA than to PMMA denture base polymer.

Saturday, July 17, 2010: 5 p.m. - 6:15 p.m.

Location: Exhibit Hall (CCIB)

DETECTION OF PERIODONTITIS ASSOCIATED SALIVARY PROTEINS AMONG DIABETICS

Author:

Z.H.A. RAHIM, H.H. CHAN, O.H. HASHIM, P.C.R. RENUKANTH, and T.B. TAIYEB ALI, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The objective of this study was to profile the salivary proteins of diabetics with and without periodontitis using two-dimensional gel electrophoresis (2-DE).

Methods:

Twelve diabetics who sought oral examination for periodontitis at the diabetic clinic, University of Malaya Medical Centre and gave their consent to participate in the study were recruited. Seven of the diabetics were categorised with moderate to advanced periodontitis and five without periodontitis using the CPI score. Unstimulated whole saliva was collected between 9 am and 11 am from the patients by spitting into ice-chilled beakers. The volume and time taken to collect the saliva were recorded. Proteins of the collected saliva were precipitated using TCA, dissolved in rehydration buffer and subjected to 2-DE. The separated proteins were analyzed and pattern-matched between individuals using the PDQuest software. The salivary proteins were accorded with spot identification numbers as determined by the programme.

Results:

The flow rate of unstimulated whole saliva in diabetics with periodontitis was 0.322 ± 0.249 mLmin⁻¹, while that of diabetics without periodontitis was 0.221 ± 0.094 mLmin⁻¹ ($p > 0.05$). Several hundreds of protein spots were separated in the 2-D gels. Of these, 114 matched those in the PDQuest database with 8 spots exclusive to the diabetics without periodontitis, 83 spots to the diabetics with periodontitis and 23 spots common to both groups.

Conclusion:

The salivary protein profiles of diabetics with periodontitis appeared to be different from those of diabetics without periodontitis. This warrants further studies to identify and validate the proteins that are associated with periodontitis.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

PERIODONTAL TREATMENT NEEDS AMONG MALAYSIAN TYPE 2 DIABETICS

Author:

R.D. VAITHILINGAM, R. RENUKANTH, M. NORDIN, S. RAHMAN, G.C. HORNBUCKLE, T.B. TAIYEB-ALI, and S.P. CHAN, University of Malaysia, Kuala Lumpur, Malaysia

Objectives:

- 1) To determine periodontal treatment needs and oral health awareness of a selected population of Malaysian Type 2 diabetic patients.
- 2) To investigate diabetes-related factors in relation to periodontal treatment needs in these patients.

Methods:

A convenient sample comprising 94 patients with type 2 diabetes (T2D) from the diabetic clinic, University of Malaya Medical Centre, were examined using the Community Periodontal Index of Treatment Needs (CPITN). Subjects were divided into periodontally diseased (PD) (CPITN \geq 3) and periodontally healthy (PH) (CPITN \leq 2) groups. They were interviewed regarding socio-demographic data and oral health awareness. Medical information (HbA1c, BMI, medication type) was obtained from medical records.

Results:

52 (55.3%) subjects had periodontal disease as compared to 42 (44.7%) subjects who were periodontally healthy. 17 (18.1%) subjects required advanced periodontal treatment (pockets \geq 6mm; CPITN=4). Male diabetic patients were more likely to have advanced periodontal disease (CPITN=4) as compared to female subjects ($p<0.05$). There were 19 (65.5%) PD subjects with HbA1c levels in the range of 7 to 8.5 as compared to 10 (34.5%) PH subjects ($p>0.05$). Among the PD subjects, pockets more than 4mm were more prevalent in the posterior teeth. Patients with advanced periodontal disease (CPITN=4) were more likely to be on a combination of insulin and oral drugs ($p<0.05$). PD diabetic patients were aware that they had mobile teeth ($p<0.001$) and gum disease ($p=0.004$).

Conclusion:

18.1% of this selected population of Malaysian Type 2 diabetic subjects requires advanced periodontal treatment. Male diabetic patients and patients on combination of insulin and oral diabetic drugs are more likely to require advanced periodontal treatment. Diabetic patients with periodontal disease were aware of the presence of mobile teeth and gum disease. (Study supported by University of Malaya Research Grant, RG 066/09HTM).

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

NOTCH EXPRESSION PATTERNS AND AMELOBLASTOMA PHENOTYPES

Author:

C.H. SIAR¹, K. NAKANO², K.S. CHUAH¹, H. NAGATSUKA³, K.H. NG⁴, and T. KAWAKAMI²,
¹Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²Matsumoto Dental University Graduate School of Oral Medicine, Shiojiri, Japan, ³Graduate School of Medicine, Dentistry & Pharmaceutical Sciences, Okayama University, Okayama, Japan, ⁴Institute for Medical Research, Kuala Lumpur, Malaysia

Background:

Notch gene family encodes four receptors (Notch1-4) that are involved in diverse processes including odontogenesis. Dysregulation of this signaling pathway has been implicated in tumorigenesis but its role during the development and progression of ameloblastoma remains unclear.

Objective:

To explore the existence of a correlation between Notch expression and ameloblastoma phenotypes. Methods: Notch receptors (1, 2, 3 and 4) and ligands (Jagged1, 2 and Delta1) were examined immunohistochemically in unicystic (UA, n=22), solid/multicystic (SA, n=23) and recurrent ameloblastoma (RA, n=19).

Results:

Notch4 showed high expression in SA (n=19/23; 82.6%) compared to UA (n=1/22; 4.5%) or RA (n=10/19; 52.6%) ($p<0.05$) suggesting positive correlation between Notch4 signaling pathway and ameloblastomas with a solid/multicystic phenotype. Underexpression of Notch ligands (Jagged1 and Delta1) compared to their receptors (Notch1, 3 and 4) ($p<0.05$), and nonreactivity for Notch2 and Jagged2 in all 3 subsets suggests that ameloblastoma tumor epithelium belongs to an earlier stage of cellular differentiation (equivalent to the inner enamel epithelium of the developing tooth germ) before lineage commitment.

Conclusions:

Present findings suggest that Notch signaling molecules play differing roles in the acquisition of different ameloblastoma phenotypes.

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

CEMENTUM DISTRIBUTION OF NATURAL TEETH OPPOSING IMPLANT-BORNE BRIDGEWORK

Author:

C.H. SIAR, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, C.K. PUA, Pua & Lai Dental Specialist Clinic, Klang, Malaysia, **K.H. NG**, Institute for Medical Research, Kuala Lumpur, Malaysia, G. ROMANOS, Eastman Dental Center, Rochester, NY, and C.G. TOH, International Medical University, Kuala Lumpur, Malaysia

Statement of the problem:

The efficacy of osseointegrated implants in supporting fixed prosthesis has been documented with high success rates. However little is known of their effects on the opposing natural dentition. The cementum layer investing the root of a tooth responds to occlusal forces either by undergoing resorption or apposition.

Objective:

To determine cementum distribution in natural teeth opposing implant-borne bridgework.

Methods:

Test samples consisted of maxillary second premolar-second molar jaw segments from four healthy adult male monkeys (*Macaca fascicularis*) that had implant-supported 3-unit bridge placement in the second premolar-second molar regions of their mandibles – one side for immediate loading and the other side for delayed loading, in a split mouth design. Control samples also consisted of maxillary second premolar-second molar jaw segments from two monkeys but without fixed prosthesis placement in the opposing mandibles. After 3 months of functional loading, the animals from both test and control samples were sacrificed, and the premolar-molar regions of the maxilla were harvested and processed for histometric analysis. Apical and cervical cementum widths were measured using an Image Analyser.

Results:

No significant differences were found in cementum distribution between test and control samples. However considerably more remodeling activity was observed in the test samples.

Conclusions:

Findings suggest that implant-borne bridgework do not produce adverse effects on the cementum layer of the opposing natural dentition.

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

WOUND HEALING POTENTIAL BY HYALURONATE GEL IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

Author:

F. AL-BAYATY¹, M. MASOOD¹, M. MASUD¹, M.I. ABU HASSAN¹, and M. ABDULLA²,
¹Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Malaysia, ²University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study was conducted to investigate whether topical application of hyaluronate gels could improve the impaired wound healing in streptozotocin-induced diabetic rats.

Materials & Methods:

Four groups of adult male Sprague Dawley rats, 2 cm full-thickness skin wound were experimentally created on the posterior neck area of streptozotocin-induced diabetic rats (STZ). Wounds of Group 1 animals were topically treated with the vehicle, gum acacia in normal saline, as a placebo control group. Group 2 animals served as reference standard and treated topically with Intrasite gel. Animals of Group 3, 4 were treated topically with new oral high molecular weight hyaluronic acid 240mg/100g gel, 0.8% hyaluronic acid gel respectively.

Results:

Macroscopically, the reference standard gel and the three gels-treated wounds were significantly healed faster in comparison to placebo control wounds group. Wound closure was significantly accelerated by topical application of high molecular weight hyaluronic acid compared to reference standard gel, 0.8% hyaluronic acid gel. Furthermore, immunohistochemical examination of healed wounds, in high molecular weight hyaluronic acid gel treated wounds revealed significant increases in macrophages, fibroblast migration, collagen regeneration, and epithelization compared with the reference standard gel and 0.8% hyaluronic acid gel.

Conclusion:

the new oral high molecular weight hyaluronic acid gel can improve the impaired healing of diabetic wounds and could be useful in treating oral ulcerations. This study was supported by University Teknologi MARA, DANA Grant 5/3/DST(11/09).

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

CYTOTOXICITY OF POLYURETHANE DIMETHACRYLATE DERIVED FROM PALM OIL POLYOL

Author:

N.H. ABU KASIM¹, F. AL-SANABANI¹, S. MUHAMAD², and S.N. GAN¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Institute of Medical Research, Kuala Lumpur, Malaysia

Objective:

The aim of this study was to investigate the cytotoxicity effect of polyurethane dimethacrylate monomer derived from palm oil polyol (PUDMA) and 2 experimental composite resins based on these monomer PUDMA- based composites) compared to an experimental Bis-GMA/TEGDMA-based composite and EsthetX flowable composite (Dentsply, Caulk, USA).

Methods:

The experimental composite resins were prepared by mixing 0.25% and 0.75% by weight camphorquinone and ethyl (4-dimethyl amino) benzoate with 60% filler for each of the following monomer systems; I) PUDMA monomer (PUDMA-based composite resin), II) Bis-GMA/TEGDMA at ratio of 75:25 by weight, III) PUDMA/BisGMA-TEGDMA at ratio of 50:50 by weight. Eight disk specimens of 2mm thick and 8mm in diameter were prepared from the PUDMA monomer and each experimental composites and EsthetX. All specimens were cured for 40 seconds on both sides. Mouse fibroblast cell lines (L-929) and MTS assay were used to evaluate the cytotoxicity effect of all composites extraction according to ISO 1099312:2002. Data was analysed using ANOVA and multiple comparison was carried out, P=.05

Results:

The percentage of viable cells was lowest in the PUDMA monomer, $P < .05$. However, it was evident that the percentage of viable cells in the PUDMA/BisGMA-TEGDMA, Bis-GMA/TEGDMA and EsthetX flowable composite was high and no statistical difference were detected.

Conclusion:

PUDMA derived from palm oil polyol showed equally high percentage of viable cells compared to Bis-GMA/TEGDMA-based composites and EsthetX flowable composite. This study was supported by e-Science Fund, Ministry of Science and Innovation, Malaysia 03-01-03SF0190

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

PROTEOMIC ANALYSIS OF WHOLE SALIVA FROM PATIENTS WITH ORAL CANCER

Author:

J. KALA, Faculty of Dentistry, Kuala Lumpur, Malaysia, O.H. HASHIM, University of Malaya Centre for Proteomics Research, University of Malaya, Kuala Lumpur, Malaysia, R.B. ZAIN, Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia, and Z.H.A. RAHIM, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The objective of this study was to compare the protein profiles of unstimulated whole saliva from patients with oral cancer with those of healthy control subjects using two-dimensional gel electrophoresis (2-DE).

Methods:

Four patients with oral cancer and four healthy subjects of matching age and sex were recruited in this study. Their unstimulated whole saliva, collected by spitting, was concentrated using TCA precipitation, dissolved in rehydration buffer and subjected to 2-DE separation. The separated proteins were analyzed, quantified and pattern-matched between individuals using computerized image analysis software. Identification of the proteins was performed by spot-pattern comparison with the previously established normal human unstimulated whole saliva proteome.

Results:

Our results demonstrated five unidentified protein spots that were exclusively detected in the 2-DE profiles of the patients' whole saliva. Among the proteins that were commonly present in the normal human whole saliva proteome, cystatin A, cystatin S and cystatin SA were not detected in the 2-DE profile of one of the oral cancer patients. Analysis of spot volumes of the proteins that were secreted in the unstimulated whole saliva showed the enhanced secretion of alpha 1-antitrypsin, C3 complement precursor, transthyretin and actin cytoplasmic 2, and reduced secretion of zinc alpha2-glycoprotein (1 isoform), parotid secretory protein, carbonic anhydrase VI and cystatin S in patients with oral cancer compared to those of the controls.

Conclusion:

Proteomics analysis of the unstimulated whole saliva of patients with oral cancer showed presence of unidentified proteins that were not normally secreted in the unstimulated whole saliva of healthy controls. Eight proteins that were commonly detected in the unstimulated whole saliva of healthy controls were also found to be aberrantly secreted by the patients.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

DETECTION OF P53 GENE MUTATIONS IN ORAL SQUAMOUS CELL CARCINOMAS

Author:

G.H. KHOR¹, M.I. ABU HASSAN¹, R.B. ZAIN², H.B. SAID GULAM KHAN¹, L. YOUNIS¹, T.H. TANG³, and K.L. THONG², ¹Faculty of Dentistry, Universiti Teknologi MARA, Selangor, Malaysia, ²University of Malaya, Kuala Lumpur, Malaysia, ³Universiti Sains Malaysia, Penang, Malaysia

Aim:

To determine the mutation type of the p53 tumor suppressor gene (TSG) for exfoliated cells in salivary samples for pre oral squamous cell carcinoma and oral squamous cell carcinoma using DNA sequencing analysis.

Methods:

In this study, five salivary samples were collected from each group of the normal subjects, pre-oral squamous cell carcinoma and oral squamous cell carcinoma patients from Oral Cancer Research and Coordinating Centre (OCRCC) of University of Malaya, Malaysia. The genomic DNA were extracted and the exon 4 region within the p53 gene were amplified with sensitive mutation specific polymerase chain reactions (PCRs) followed by DNA purification and sequence analysis subsequently.

Results:

From the reams of sequencing chromatograms indicated the PCR products from these salivary samples of normal subjects showed 100% match with normal reference. In the pre-oral squamous cell carcinoma showed 40% of normal p53 sequence, 40 % of single nucleotide polymorphism (SNP) and 20% of substitution of G to C. Whereas the sequencing chromatograms of oral squamous cell carcinoma showed 40% of substitutions of G to C and 60% of SNP.

Conclusions:

Our study demonstrated the single base substitution of G to C mutation and SNP of p53 gene in most of oral squamous cell carcinoma patients. We concluded that single base substitution of mutations and SNP in p53 gene can be detected by using direct sequencing assay.

Location: Function Room En Shi (3rd Floor) (Shangri-La Hotel)

EFFICACY OF R-ENDO® AND PROTAPER® RE-TREATMENT FILES FOR REMOVING REALSEALTM

Author:

A.Y. AL-HADDAD, Department of Conservative Dentistry, , University of Malaya, Kuala Lumpur, Malaysia, and Z.A. CHE AB AZIZ, Department of Conservative Dentistry, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

to evaluate the efficacy of two re-treatment rotary systems (R-Endo® and ProTaper® re-treatment systems) and hand instruments (Hedström files) for mechanical removal of laterally and vertically compacted Real SealTM from the root canal

Methods:

Seventy eight extracted premolar teeth were prepared and filled with RealSealTM using either cold lateral compaction or warm vertical compaction techniques (39 roots each). Each group was subgrouped into 3 groups. Re-treatment was done with one of the following: Hedström files (control group), R-Endo® and ProTaper® re-treatment files (13 roots each). Tooth-Clearing technique was conducted and the percentage of the remaining material in each third of the canal was calculated using image analyzer software and the mean of the residues was statistically analyzed.

Results:

For cold laterally compacted RealSealTM there was no significant difference in mean percentage of remnants in the coronal, middle and apical third of the root canal between used files ($P>0.05$). However, for the warm vertically compacted the two rotary re-treatment files left significantly less remnants than Hedström files in the middle third of the root canal ($P<0.05$) but no significant difference in remnants in the coronal and apical thirds. The two rotary re-treatment system indicated the mean percentage of remnants was significantly more in the apical third than the middle and coronal thirds ($P<0.05$). However for the Hedström files the remnants was significantly higher in middle and apical thirds ($P<0.05$) than coronal third with no significant difference between the middle and apical thirds ($P >0.05$)

Conclusion:

with the limitation of this study, none of the used system was able to completely remove of laterally and vertically compacted RealSealTM from the root canal.

Location: Function Room Xiang Fan (3rd Floor) (Shangri-La Hotel)

DENTAL STUDENTS' PERCEPTIONS OF STRESS AND SOCIAL SUPPORT

Author:

R. SAUB¹, M.R. SURVASHE¹, N.M. ISMAIL², T.N. MOHD DOM³, and V. MUIRHEAD⁴,
¹University of Malaya, Kuala Lumpur, Malaysia, ²Universiti Sains Malaysia, Pulau Pinang, Malaysia, ³Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia, ⁴McGill University, Montreal, QC, Canada

Objectives:

To compare the stress levels in preclinical and clinical dental students among three main dental schools in Malaysia and to assess the effect of social support on the stress levels in preclinical and clinical dental students.

Method:

This is a cross sectional survey of all undergraduate students enrolled at the Faculty of Dentistry University of Malaya (UM), National University of Malaysia (UKM) and University Science Malaysia (USM), conducted in July 2005. The instruments used were the 16 item Dental Environment Scale (DES) for pre-clinical and 37 item DES for the clinical students and four items for the social support questions. The total stress score were adjusted to standardise the score.

Results:

A total of 375 preclinical and a total of 417 clinical undergraduate dental students responded to the questionnaires. The total adjusted stress score for both preclinical and clinical were similar for all three dental schools. In all the three dental schools, the most stressful item reported among the preclinical students was; fear of failing (UM =78.8%, UKM= 55.7%, USM = 61.7%) and completing the course was the most stressful reported among the clinical students (UM= 81.1%, UKM= 86.9%, USM = 85.3%). Students in the preclinical years who received more support from teachers and students had lower adjusted stress score. On the other hand there was no positive influence of social support on the stress levels among the clinical students.

Conclusion:

The level of stress in all three dental schools are similar regardless their level of study. The social support seems to positively influence the stress levels for preclinical students and not for the clinical students.

Location: Function Room En Shi (3rd Floor) (Shangri-La Hotel)

RAPID WHOLE GENOME AMPLIFICATION FOR ORAL RINSE

Author:

G.H. KHOR, Faculty of Dentistry, University Teknologi MARA, Shah Alam, Malaysia, K.L. THONG, Institute of Post Graduate, University of Malaya, Kuala Lumpur, Malaysia, G.R.A. FROEMMING, Institute for Medical Molecular Biotechnology, Faculty of Medicine, Shah Alam, Malaysia, and R.B. ZAIN, Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia

Introduction:

Genomic DNA is normally obtained from blood, swabs brushes, and scraping of buccal cells are sources of genomic DNA for molecular analyses. Therefore, less invasive and more cost-efficient procedures for collecting genomic DNA are needed for a large epidemiological study.

Objective:

The study described a rapid method for obtaining the high-quality whole genomic DNA from buccal cells in the oral rinses of patients. Such approach has high acceptability and allows for a large number of PCR assays from a single sample. Method: In this study, twenty-two subjects vigorously swished their mouth with normal saline and expelled the oral rinse into a centrifuge tube. Then, DNA was isolated from all exfoliated buccal cells in the oral rinse samples by using saliva DNA isolation kit (Norgen, USA). The quality and purity of extracted DNA were analyzed by using NanoDrop Spectrophotometer. The extracted DNA was amplified for p53 genes using exon 4 as a primer. The presence of PCR products were identified by bioanalyzer and electrophoresis gel. The PCR bands in the electrophoresis gel were scanned by Image Analyser.

Result:

The average yield of extracted DNA was 27 ng/µl. The electrophoretic analysis of the extracted DNA showed clear and detectable levels of high molecular weight genomic DNA.

Conclusion:

DNA from the exfoliated buccal cells in the oral rinsed samples was successfully extracted in this study. The results also indicated that this procedure may be suitable for large population's study in which oral rinse sample can be collected easily from the subjects and stored for months prior DNA molecular applications.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

BOND STRENGTHS OF SOFT-LINERS TO CHEMICALLY DIFFERENT DENTURE BASE POLYMERS

Author:

O.H. BAYATI, International Medical University (IMU), Kuala Lumpur, Malaysia, S. AHMAD, University of Malaya, Kuala Lumpur, Malaysia, and N. YUNUS, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To compare tensile bond strengths (TBS) of four silicone soft liners to two chemically different denture base polymers (PMMA and UDMA).

Methods:

Four silicone soft liners (GC Soft(GS), GC Extrasoft (GXS), Silagum Comfort (SC) and Mollosil Plus (MP)) were processed to PMMA (IMPACT, Dental exports of London, England) and UDMA (ECLIPSE, DENTSPLY, USA) denture base polymers following the manufacturers' recommended relining method. For each soft liner-denture base combination group, 10 specimens were prepared using a custom-made brass mould. The bonding area was 10 mm in diameter and 3mm in thickness. The specimens were stored in distilled water (37°C) for 24 hours before testing. The specimens were tested for TBS using universal testing machine (Shimadzu, Japan) and mode of failure was determined using stereomicroscope at X 10 magnification (Kyowa SD-2PL, Japan). Data were analyzed using Kruskal-Wallis and Mann-Whitney tests.

Results:

For PMMA group, there were significant differences in TBS amongst soft lining materials ($p < 0.05$), except, between GS (1.94 MPa) and GXS (2.04 MPa). While, in UDMA group, there was non-significant difference in TBS between all soft liners except, for MP which showed significant lower TBS (0.08 MPa). All soft lining materials showed a significantly higher TBS to PMMA than to UDMA ($p < 0.05$), except for SC which showed no significant difference ($P > 0.05$). The mixed mode of failure was the most common in PMMA group. While, Adhesive mode of failure was the most common in UDMA group, except for Silagum Comfort was mostly adhesive in both groups.

Conclusions:

The silicone soft liners showed different TBS when used to reline PMMA compared when relined UDMA denture base polymer. Soft lining materials showed lower TBS to UDMA than to PMMA denture base polymer.

Saturday, July 17, 2010: 5 p.m. - 6:15 p.m.

Location: Exhibit Hall (CCIB)

FIBRONECTIN IN SALIVA AS A MARKER FOR MISCARRIAGE AND PERIODONTITIS

Author:

F. ARIFFIN, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, S. KAMIN, Imperial Medical Centre, Kuala Lumpur, Malaysia, and J. HASSAN, Obstetrics and Gynecology Dept, University of Malaya, Kuala Lumpur, Malaysia

Miscarriage is the most common adverse pregnancy outcome and its association with distant infections such as chronic periodontitis has not been fully elucidated. Markers for adverse pregnancy outcome have been evaluated such as fetal fibronectin which has been widely accepted as a marker for screening for preterm labor. However, a marker for miscarriage has not been investigated.

Objectives:

1) To evaluate the association between fibronectin in saliva of pregnant ladies who had miscarriages.

2) To determine the association of fibronectin in saliva and chronic periodontitis. Methods: Twenty-five pregnant ladies with history of miscarriage(s) were recruited as the test group and 16 pregnant ladies without any history of miscarriage served as control. All the subjects fulfilled a set of inclusion and exclusion criteria for this study. Periodontal examinations were done to determine for subject's periodontal status. Saliva was collected and determination of fibronectin in the saliva samples was done using an ELISA technique with commercially plasma fibronectin kit (Imuclone®). The results were analyzed with Mann Whitney Test of SPSS.

Results:

The results showed i) Statistically significant higher median of fibronectin level in the saliva samples of the test group (0.10 . μ g/mL) compared to the control group (0.00 . μ g/mL) (p-value =0.023). ii) There was higher fibronectin level in saliva samples of both test and control groups who had chronic periodontitis compared to healthy subjects, however the difference was only statistically significant among control group (p-value= 0.046).

Conclusion:

Fibronectin in saliva samples was positively correlated to miscarriage and therefore may be a potential marker for miscarriage. For chronic periodontitis, there was prevailing higher fibronectin level compared to healthy subjects. However, further studies should be conducted to confirm these findings. This study was supported by University of Malaya IPPP.PS308/2007B.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

DETECTION OF PERIODONTITIS ASSOCIATED SALIVARY PROTEINS AMONG DIABETICS

Author:

Z.H.A. RAHIM, H.H. CHAN, O.H. HASHIM, P.C.R. RENUKANTH, and T.B. TAIYEB ALI, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The objective of this study was to profile the salivary proteins of diabetics with and without periodontitis using two-dimensional gel electrophoresis (2-DE).

Methods:

Twelve diabetics who sought oral examination for periodontitis at the diabetic clinic, University of Malaya Medical Centre and gave their consent to participate in the study were recruited. Seven of the diabetics were categorised with moderate to advanced periodontitis and five without periodontitis using the CPI score. Unstimulated whole saliva was collected between 9 am and 11 am from the patients by spitting into ice-chilled beakers. The volume and time taken to collect the saliva were recorded. Proteins of the collected saliva were precipitated using TCA, dissolved in rehydration buffer and subjected to 2-DE. The separated proteins were analyzed and pattern-matched between individuals using the PDQuest software. The salivary proteins were accorded with spot identification numbers as determined by the programme.

Results:

The flow rate of unstimulated whole saliva in diabetics with periodontitis was 0.322 ± 0.249 mLmin⁻¹, while that of diabetics without periodontitis was 0.221 ± 0.094 mLmin⁻¹ ($p > 0.05$). Several hundreds of protein spots were separated in the 2-D gels. Of these, 114 matched those in the PDQuest database with 8 spots exclusive to the diabetics without periodontitis, 83 spots to the diabetics with periodontitis and 23 spots common to both groups.

Conclusion:

The salivary protein profiles of diabetics with periodontitis appeared to be different from those of diabetics without periodontitis. This warrants further studies to identify and validate the proteins that are associated with periodontitis.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

GINGIVAL RECESSIONS COVERAGE WITH ACELLULAR DERMAL MATRIX VERSUS

Author:

I.M. SHAPEEN, and T.B.B.T. ALI, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To assess success of acellular dermal matrix (ADM) allograft and subepithelial connective tissue graft (sCTG) to treat gingival recession and comparison of their effectiveness in a selected Malaysian population.

Methods:

Six patients with eight gingival recessions of Miller's Class I and II were randomly assigned to either control (sCTG) or test (ADM) groups. All patients underwent pre-surgical preparation and baseline data was obtained. Exposed roots were planed and conditioned with tetracycline solution. In the control group, recessions were treated by palatal sCTG with a coronally repositioned flap; whereas in the test group, acellular dermal matrix was used as a substitute. Recession height (RH), recession width (RW), probing pocket depth (PPD), keratinized gingiva (KG), clinical attachment level (CAL), full mouth plaque score (PS) and bleeding score (BS) were measured at baseline, 3- and 6-months intervals.

Results:

Root coverage for ADM and sCTG was $71.75\% \pm 19.12$ and $54.25\% \pm 34.24$, respectively but the difference was statistically insignificant. Improvements from baseline to 3 and also 6 months were significant in both ADM and sCTG groups for mean RH reduction (2.75 ± 0.50 mm at 3 and 6 months in ADM group, 1.75 ± 0.65 at 3 months and 1.63 ± 1.03 at 6 months for sCTG group) and clinical attachment gain (2.50 ± 1.00 mm at 3 and 2.75 ± 0.50 mm at 6 months in ADM group, 1.50 ± 0.71 at 3 months and 1.63 ± 1.03 at 6 months for sCTG group). Significant increase in mean KG width ($p < 0.05$) was observed within both groups (3.00 ± 1.41 mm at 3 and 6 months in ADM group; 2.00 ± 2.16 mm at 3 months, 1.75 ± 1.89 at 6 months in sCTG group). However, the differences in mean changes were not significant between the two groups in all parameters.

Conclusion:

ADM and sCTG were effective in treating gingival recession, with minimal differences between their outcomes.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

PERIODONTAL TREATMENT NEEDS AMONG MALAYSIAN TYPE 2 DIABETICS

Author:

R.D. VAITHILINGAM, R. RENUKANTH, M. NORDIN, S. RAHMAN, G.C. HORNBUCKLE, T.B. TAIYEB-ALI, and S.P. CHAN, University of Malaysia, Kuala Lumpur, Malaysia

Objectives:

- 1) To determine periodontal treatment needs and oral health awareness of a selected population of Malaysian Type 2 diabetic patients.
- 2) To investigate diabetes-related factors in relation to periodontal treatment needs in these patients.

Methods:

A convenient sample comprising 94 patients with type 2 diabetes (T2D) from the diabetic clinic, University of Malaya Medical Centre, were examined using the Community Periodontal Index of Treatment Needs (CPITN). Subjects were divided into periodontally diseased (PD) (CPITN \geq 3) and periodontally healthy (PH) (CPITN \leq 2) groups. They were interviewed regarding socio-demographic data and oral health awareness. Medical information (HbA1c, BMI, medication type) was obtained from medical records.

Results:

52 (55.3%) subjects had periodontal disease as compared to 42 (44.7%) subjects who were periodontally healthy. 17 (18.1%) subjects required advanced periodontal treatment (pockets \geq 6mm; CPITN=4). Male diabetic patients were more likely to have advanced periodontal disease (CPITN=4) as compared to female subjects ($p<0.05$). There were 19 (65.5%) PD subjects with HbA1c levels in the range of 7 to 8.5 as compared to 10 (34.5%) PH subjects ($p>0.05$). Among the PD subjects, pockets more than 4mm were more prevalent in the posterior teeth. Patients with advanced periodontal disease (CPITN=4) were more likely to be on a combination of insulin and oral drugs ($p<0.05$). PD diabetic patients were aware that they had mobile teeth ($p<0.001$) and gum disease ($p=0.004$).

Conclusion:

18.1% of this selected population of Malaysian Type 2 diabetic subjects requires advanced periodontal treatment. Male diabetic patients and patients on combination of insulin and oral diabetic drugs are more likely to require advanced periodontal treatment. Diabetic patients with periodontal disease were aware of the presence of mobile teeth and gum disease. (Study supported by University of Malaya Research Grant, RG 066/09HTM).

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

NOTCH EXPRESSION PATTERNS AND AMELOBLASTOMA PHENOTYPES

Author:

C.H. SIAR¹, K. NAKANO², K.S. CHUAH¹, H. NAGATSUKA³, K.H. NG⁴, and T. KAWAKAMI²,
¹Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²Matsumoto Dental University Graduate School of Oral Medicine, Shiojiri, Japan, ³Graduate School of Medicine, Dentistry & Pharmaceutical Sciences, Okayama University, Okayama, Japan, ⁴Institute for Medical Research, Kuala Lumpur, Malaysia

Background:

Notch gene family encodes four receptors (Notch1-4) that are involved in diverse processes including odontogenesis. Dysregulation of this signaling pathway has been implicated in tumorigenesis but its role during the development and progression of ameloblastoma remains unclear. Objective: To explore the existence of a correlation between Notch expression and ameloblastoma phenotypes.

Methods:

Notch receptors (1, 2, 3 and 4) and ligands (Jagged1, 2 and Delta1) were examined immunohistochemically in unicystic (UA, n=22), solid/multicystic (SA, n=23) and recurrent ameloblastoma (RA, n=19).

Results:

Notch4 showed high expression in SA (n=19/23; 82.6%) compared to UA (n=1/22; 4.5%) or RA (n=10/19; 52.6%) ($p < 0.05$) suggesting positive correlation between Notch4 signaling pathway and ameloblastomas with a solid/multicystic phenotype. Underexpression of Notch ligands (Jagged1 and Delta1) compared to their receptors (Notch1, 3 and 4) ($p < 0.05$), and nonreactivity for Notch2 and Jagged2 in all 3 subsets suggests that ameloblastoma tumor epithelium belongs to an earlier stage of cellular differentiation (equivalent to the inner enamel epithelium of the developing tooth germ) before lineage commitment.

Conclusions:

Present findings suggest that Notch signaling molecules play differing roles in the acquisition of different ameloblastoma phenotypes.

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

DNA PLOIDY IN ORAL SQUAMOUS CELL CARCINOMA

Author:

H. IBRAHIM¹, P. SHANMUHASUNTHARAM¹, and R.B. ZAIN², ¹University of Malaya, Kuala Lumpur, Malaysia, ²Oral Cancer Research & Coordinating Centre (OCRCC), University of Malaya, Kuala Lumpur, Malaysia

Objectives:

(I)- To compare the status of DNA ploidy of the nucleus extracted from normal tissue (control) which is a mainly lymphocyte with the DNA of the tumour tissue (Oral Squamous Cell Carcinoma).

(II)- To compare the status of DNA ploidy of the margin tissues (clear of tumour) with the DNA ploidy of the normal tissue (control).

Methods:

Multiple blocks of paraffin-embedded tissue from resection specimens of patients with oral squamous cell carcinoma will be selected, who have had no previous chemotherapy or radiotherapy. Multiple samples from each specimen will be collected to minimize the limitation imposed by heterogeneity. Enzyme digestion to extract the nucleus. The comparison of the Nuclear Optical Density values of these cases that were studied successfully by Image Cytometry with Feulgen-stained tissue sections. The samples will be processed according to the image path system manufacturer specifications.

Results:

Preliminary results were found diploid and nondiploid (aneoploid and tetraploid), revealed a statistically significant difference between the control groups and both the tumour and margin groups ($p < 0.01$, not shown),

Conclusion:

Preliminary results suggest that the tumour tissue is considered to be diploid if the mean percentage of the tumour cells (nondiploid) does not exceed 10%. Otherwise it will be considered as aneoploid tumour tissue if the mean percentage of the tumour cells (nondiploid) is more than 10%.

Location: Function Room En Shi (3rd Floor) (Shangri-La Hotel)

EFFECT OF POROSITY ON COMPRESSIVE STRENGTH OF RESIN MODIFIED GICS

Author:

A.H. ALI, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, and H. ABDULLAH, University of Malaya, Kuala Lumpur, Malaysia

Objective: The objective of this study was to evaluate the effect of porosity size (1-100) μm on the compressive strength of Fuji CEM (GC Corp, Tokyo, Japan) and Fuji PLUS CAPSULES (GC Corp, Tokyo, Japan).

Method:

A total of thirty cylindrical specimens 6mm height and 4mm in diameter were prepared for both cements and stored in distilled water at 37°C for 24 hour. Each cement type was tested using Universal Testing Machine SHIMADZU (SHIMADZU Corp, Tokyo, Japan), then the fractured surfaces of 10 randomly selected specimens for each cement type were examined using SEM to determine the amount and size of porosity present.

Results:

Non-parametric Mann-Whitney Test was used to compare the compressive strength of these luting cements. There was no statistically significant difference in compression strength of Fuji CEM and Fuji PLUS CAPSULES ($p=0.372$). The mixing method found to be statistically significant with the porosity size of (10-50) μm and (50-100) μm diameter, however it was not significant with the porosity size of (1-10) μm in diameter ($p>0.04$). The mechanical mixing produced a significantly higher percentage of porosity size of (10-50) μm and (50-100) μm in diameter with ($p=0.001$, $p=0.04$ respectively). Porosity was incorporated in all samples.

Conclusion:

There was no linear relationship between compressive strength and porosity size (1-100) μm in diameter for Fuji CEM and Fuji PLUS CAPSULES which were used in this study.

This study was supported by University Malaya IPPP. PS 102/2008A.

Location: Function Room Xiang Fan (3rd Floor) (Shangri-La Hotel)

CEMENTUM DISTRIBUTION OF NATURAL TEETH OPPOSING IMPLANT-BORNE BRIDGEWORK

Author:

C.H. SIAR, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, C.K. PUA, Pua & Lai Dental Specialist Clinic, Klang, Malaysia, K.H. NG, Institute for Medical Research, Kuala Lumpur, Malaysia, G. ROMANOS, Eastman Dental Center, Rochester, NY, and C.G. TOH, International Medical University, Kuala Lumpur, Malaysia

Statement of the problem:

The efficacy of osseointegrated implants in supporting fixed prosthesis has been documented with high success rates. However little is known of their effects on the opposing natural dentition. The cementum layer investing the root of a tooth responds to occlusal forces either by undergoing resorption or apposition.

Objective:

To determine cementum distribution in natural teeth opposing implant-borne bridgework.

Methods:

Test samples consisted of maxillary second premolar-second molar jaw segments from four healthy adult male monkeys (*Macaca fascicularis*) that had implant-supported 3-unit bridge placement in the second premolar-second molar regions of their mandibles – one side for immediate loading and the other side for delayed loading, in a split mouth design. Control samples also consisted of maxillary second premolar-second molar jaw segments from two monkeys but without fixed prosthesis placement in the opposing mandibles. After 3 months of functional loading, the animals from both test and control samples were sacrificed, and the premolar-molar regions of the maxilla were harvested and processed for histometric analysis. Apical and cervical cementum widths were measured using an Image Analyser.

Results:

No significant differences were found in cementum distribution between test and control samples. However considerably more remodeling activity was observed in the test samples.

Conclusions:

Findings suggest that implant-borne bridgework do not produce adverse effects on the cementum layer of the opposing natural dentition.

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

EVALUATION OF COMPLETE DENTURE AESTHETICS BY LAYPERSONS

Author:

O.F. TAWFIQ¹, Z.M. ISA¹, O. MOHD RIJAL¹, and N. MOHD NOOR², ¹University of Malaya, Kuala Lumpur, Malaysia, ²University Technology of Malaysia, Kuala Lumpur, Malaysia

Objectives:

This study was conducted to: i). determine the relationship of facial measurements to the width of the anterior teeth ii). determine the aesthetically pleasing widths of anterior teeth in complete dentures, based on the results of aesthetic evaluation of observers who were laypeople.

Methods:

Photographs of 100 dentate subjects, relaxed and smiling, were used to determine: interpupillary distance (IPD), inner-canthal distance (ICD), interalar width (IA) and intercanine tip distance (TTP). Frontal pictures of 30 edentulous patients during the aesthetic trial denture stage, with the lips opened in the intercuspal position were taken. The teeth used for these patients were limited to the availability of the appropriate sized teeth in the laboratory. Each image was processed to yield 2 other images with varying anterior teeth width (following IA distance, and following relationship of the width of the teeth to ICD). 19 lay people assessed the photographs for dental attractiveness by marking on a visual analogue scale. The scores of each image were totalled to yield the aesthetic appearance score.

Results:

TTP was highly correlated to ICD ($r^2=0.928$) in the dentate group. Hence this relationship was evaluated in the complete denture group. The assessors chose photographs with the teeth set up according to the correlation with ICD as the most attractive and the photographs with teeth set up following IA as the least attractive. However, they did not make any discrimination between teeth set up correlated with ICD and teeth that were set up following stock teeth availability ($P>0.05$).

Conclusion:

The results suggest that lay people considered that teeth which were in proportion to the face, the same as in the dentate situation were esthetically appealing. However, teeth which were noticeably wide were classified as unattractive. Supported by University of Malaya Postgraduate Research Fund.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

COTININE, C REACTIVE PROTEIN, ANTIOXIDANT IN SMOKERS AND NON SMOKERS

Author:

F. AL BAYATY¹, M.A. ABDULLA², M. MASOOD¹, M. ABU HASSAN¹, H. ALI³, and N.A. BAHARUDDIN⁴, ¹Department of Restorative Dentistry Faculty of DentistryUniversiti Teknologi MARA, Shah Alam, Malaysia, ²University of Malaysia, Kuala Lumpur, Malaysia, ³Department of Chemistry, Faculty of Science, Kuala Lumpour, Malaysia, ⁴Univ. of Malaya, Kuala Lumpur, Malaysia

Objective:

The purpose of this study was to evaluate, the associations between serum total antioxidant capacity, C-Reactive proteins, cotinine levels and periodontal diseases in smokers and non smokers.

Material and Methods:

A total of 67 male patients were examined, 33 (49.2%) were smokers and 34 (50.7%) were non smokers. The periodontal variables recorded were amount of Visible Plaque score, gingival bleeding Index and community periodontal index. Samples of blood were obtained. The serum cotinine analyzed by ELISA technique. The antioxidant capacity measured by using the ferric reducing ability of plasma assay FRAPS. C - Reactive protein levels measured by using Beckman Coulter Image Immunochemistry System.

Results:

Serum cotinine level showed a highly significant increase ($p=0.001$) and antioxidant level showed a highly significant decrease ($p=0.001$) in the smoker group when compared to the non-smoker group. In gingivitis group, highly significant difference of serum cotinine ($p=0.001$) and antioxidant ($p=0.001$) levels was found between the smokers and non smokers. The periodontitis group showed high significant difference for the cotinine level ($p=0.001$) but less significant for antioxidant level ($p=0.046$). Mean plaque score and bleeding on probing score was found higher in smokers; however these scores are not statistically significant ($p>.05$). No significant difference was found between Serum cotinine and antioxidants levels when gingivitis and periodontitis was compared. Mean serum cotinine level was higher in periodontitis and mean antioxidants level was higher in gingivitis group.

Conclusion:

Serum cotinine level showed a highly significant increase and antioxidant level showed a highly significant decrease in the smoker compared to the non-smoker group. Smoker group showed a significant difference of C - reactive protein, no significant difference of serum cotinine and mean antioxidants levels in gingivitis and periodontitis groups.

Location: Function Rooms Xian Tao + Xian Ning (3rd Floor) (Shangri-La Hotel)

CHROMOSOMAL ABERRATIONS DETERMINED BY COMPARATIVE GENOMIC HYBRIDIZATION IN ORAL CANCER

Author:

M.N.Z. AL-ANI, Sr.¹, Z.M. ZAINI¹, M.A. NOOR JULIEANA², N.A. SHARIFAH³, and R.B. ZAIN²,
¹Department of Oral Medicine, Oral Pathology and Periodontology, Faculty of Dentistry,
University of Malaya, Kuala Lumpur, Malaysia, ²Oral Cancer Research & Coordinating Centre
(OCRCC), Kuala Lumpur, Malaysia, ³UNIVERSITI KEBANGSAAN MALAYSIA MEDICAL CENTRE,
Kuala Lumpur, Malaysia

Objective:

To elucidate the genetic alterations in 20 surgically removed fresh frozen oral squamous cell carcinoma (OSCC) cases using the CGH technique.

Method:

Twenty frozen tissue specimens of OSCC from the Malaysian Oral Cancer Data and Tumour Bank System (MOCDTBS) coordinated by OCRCC-UM were included in this study. A macrodissection technique for the frozen tissue sample was used to obtain $\geq 70\%$ epithelial tumor cells. High molecular weight genomic DNA was extracted from samples and from whole blood of a healthy donor using a DNA extraction kit (Qiagen's QIAamp DNA Mini kit). Hybridization and detection of differentially labeled test and reference DNAs to commercially prepared normal metaphase chromosomes was performed using nick translation method. Image acquisition was done using epifluorescence microscope (Olympus, BX61) equipped with 100-W mercury lamp and CCD camera (cool-1300QS, ASI) controlled by an image analysis system (Applied Spectral Imaging, US).

Results:

CGH analysis revealed gains and/or losses in DNA sequence copy number in all tumors. Gains in DNA sequence copy number were detected frequently for chromosome arms 1p2233 (8/20), 1q32-42 (8/20), 3p13-14 (6/20), 8q21.1-qter (8/20) and 10q22-qter (7/20), and losses in chromosome arms 7q11.2-21 (7/20), 14q11.2-13 (7/20), 15q11.2-21 (10/20), 18q12-23 (11/20), 19q (6/20) and 21q (10/20).

Conclusion:

All samples showed both losses and gains of DNA at parts of chromosomes. The study revealed losses of chromosomes 18q12-23 indicative of genes which may be involved in the development of OSCCs in a manner similar to their role in the development of other carcinomas, including colon and pancreatic cancers.

This study was supported by University Malaya IPPP. PS282/2007B and University of Malaya Scholarship program.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

MECHANICAL PROPERTIES OF BP-UDMA AND ITS COPOLYMER FOR DENTAL RESIN

Author:

F. ALSANABANI¹, N.H. ABU KASIM², and S.N. GAN², ¹University of Malaysia, Kuala Lumpur, Malaysia, ²University of Malaya, Kuala Lumpur, Malaysia

Objectives:

This study was conducted to determine the flexural strength (FS), modulus of elasticity (ME) and work of fracture = toughness (WOF) of neat biopolyol-urethane dimethacrylate (BP-UDMA, the biopolyol derived from palm oil) and its copolymers, which compare with neat Bis-GMA and its common copolymer BisGMA /TEGDMA (3/1) as control.

Methods:

Five visible light cure samples using were prepared, using Camphorquinone (CQ; 0.2%wt) and Ethyl-4-N,N-dimethylaminobenzoate (EDMAB; 0.8%wt) by weight, respectively, as the followings: 1)BP-UDMA; 2) Bis-GMA; 3) Bis-GMA/TEGDMA (3/1; binary resin); 4) BP-UDMA/(Bis-GMA/TEGDMA) (1/1; ternary resin); and 5) BP-UDMA/Bis-EMA (1/1; binary resin). For each sample, 10 bar shaped specimens were fabricated (12X2X2mm), to do 3-point bending test. After 24 hr water storage at 37 C, the load was applied to specimen at a cross-head of 0.75 mm/min until the specimen fractures. Then the FS, ME, and WOF were calculated and the results were analyzed by ANOVA and Post Hoc Dunnett T3 for multiple comparisons.

Results:

The flexural strength and work of fracture of BP-UDMA neat polymer and its copolymer, either as binary resin with Bis-EMA or as ternary resin with Bis-GMA/TEGDMA, showed higher than that of Bis-GMA neat polymer and its common copolymer Bis-GMA/TEGDMA.

Conclusions:

The biopolyol-urethane dimethacrylate and its copolymer with Bis-EMA have higher flexural strength and work of fracture than that of Bis-GMA and its common copolymer with TEGDMA, respectively. Moreover, the common copolymer Bis-GMA/TEGDMA replacement (50% by wt) by BP-UDMA exhibited increasing the flexural strength and work of fracture (toughness), with maintain the modulus of elasticity.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

EFFECT OF SURFACE TREATMENTS ON SHEAR BOND STRENGTH OF TURKOM-CERA

Author:

B.M.A. AL-MAKRAMANI¹, A.A.A. RAZAK¹, and M.I. ABU-HASSAN², ¹University of Malaya, Kuala Lumpur, Malaysia, ²Universiti Teknologi MARA, Shah Alam, Malaysia

Objectives:

To evaluate the effect of surface treatments on shear bond strength (SBS) of Turkom-Cera (Turkom-Ceramic (M) Sdn. Bhd., Puchong, Malaysia) all-ceramic material cemented with resin cement Panavia-F (Kuraray Medical Inc., Okayama, Japan).

Methods:

Forty Turkom-Cera ceramic discs (10mm x 3mm) were prepared and randomly divided into 4 groups. The discs were wet ground to 1000 grit and subjected to four treatments: 1) no treatment (Control), 2) 50- μm Al_2O_3 at 36-psi (Group AL), 3) silane (Clearfil Porcelain Bond Activator/Clearfil SE Bond, Kuraray, Group SI) and 4) 50- μm Al_2O_3 at 36-psi + silane (Group AL+SI). The four groups of 10 specimens each were bonded with Panavia-F resin cement as per manufacturer instructions, using a bonding jig recommended by ISO/TS/11405/2003. The bonded specimens were then stored in distilled water for 24 hours at 37°C. SBSs were determined using the universal testing machine (Instron) at 0.5mm/min crosshead speed and then the SBS was calculated. Failure modes were recorded and a qualitative micro-morphologic examination of different surface treatments and the representative failure modes were analyzed using SEM.

Results:

Mean SBS (MPa), standard deviation and failure mode are shown below:

	N	Mean SBS	SD	95% Confidence Interval		Failure mode		
				Lower Bound	Upper Bound	Adhesive	Cohesive	Mixed
Control	10	10.83	1.45	9.79	11.87	10	-	-
AL	10	16.42	3.38	14.01	18.84	7	-	3
SI	10	16.18	2.54	14.36	18.00	7	-	3
AL+SI	10	19.13	2.43	17.39	20.86	5	-	5

The data were analyzed with ANOVA and Tukey HSD Test ($p < 0.05$). The mean SBS of AL, SI and AL+SI was significantly higher than Control ($p < 0.05$). However, there was no significant difference between AL, SI and AL+SI.

Conclusion:

In this study, it was found that when using Panavia-F resin cement and Clearfil silane; sandblasted Turkom-Cera specimens produced the highest mean SBS values. Almost similar SBS values were obtained for Turkom-Cera specimens when sandblasted with 50- μm Al_2O_3 or silanated with clearfil silane. Therefore, these three surface treatments in combination appear to be the best methods to achieve higher SBS for Turkom-Cera restorations. This study was supported by IPPP; University of Malaya, Kuala Lumpur. Account no:PS028/2008B. Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

A FINITE ELEMENT STUDY OF THE MULTILAYERED STRUCTURED DENTAL POST

Author:

A.A. MADFA, N.H. ABU KASIM, M. HAMDY, R. RAHBARI G, and M.H. LATIFI, University of Malaya, Kuala Lumpur, Malaysia

Ideally, dental post should have stiffness that is similar to the crown at the coronal part and stiffness similar to the dentine at the apical part. This will reduce stress concentration at either coronal or the apical parts of the dentine and minimize the chance of interfacial loosening and enhance the reliability of post.

Objective:

To investigate the biomechanical behaviour of Multilayered Structured Dental Posts (MSDPs) using finite element analysis (FEA).

Methods:

Two models of MSDPs consist of multilayer design of xTi-yHA composition added to a zirconia layer (model A) and the same compositions added to alumina layer (model B) was compared with pure zirconia (model C) and pure titanium (model D) posts. The fractions of Ti and HA was varied layer by layer, gradually. FEA of models A, B, C and D were compared. Stress distributions due to 100 N vertical, oblique, and horizontal loads were investigated.

Results:

The highest stress regions were observed at area of the applied force and at the apical part of the dentine when vertical load was applied. Models C and D showed a considerable stress at the middle and apical region of the posts compared to models A and B. Oblique load showed high stresses around the loading area, then at the outer surface of the dentine for all the models. While in models C and D the stress highly propagated into the inner part of the canal compared to A and B. Horizontal load showed a similar stress distribution as the oblique load, but it demonstrated higher propagation of stress into the centre of the canal.

Conclusions:

The results showed that models A and B demonstrated advantages compared with models C and D. Therefore, it is recommended that dental post have multilayered structure to function efficiently at coronal and apical parts.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

WOUND HEALING POTENTIAL BY HYALURONATE GEL IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

Author:

F. AL-BAYATY¹, M. MASOOD¹, M. MASUD¹, M.I. ABU HASSAN¹, and M. ABDULLA²,
¹Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Malaysia, ²University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study was conducted to investigate whether topical application of hyaluronate gels could improve the impaired wound healing in streptozotocin-induced diabetic rats.

Materials & Methods:

Four groups of adult male Sprague Dawley rats, 2 cm full-thickness skin wound were experimentally created on the posterior neck area of streptozotocin-induced diabetic rats (STZ). Wounds of Group 1 animals were topically treated with the vehicle, gum acacia in normal saline, as a placebo control group. Group 2 animals served as reference standard and treated topically with Intrasite gel. Animals of Group 3, 4 were treated topically with new oral high molecular weight hyaluronic acid 240mg/100g gel, 0.8% hyaluronic acid gel respectively.

Results:

Macroscopically, the reference standard gel and the three gels-treated wounds were significantly healed faster in comparison to placebo control wounds group. Wound closure was significantly accelerated by topical application of high molecular weight hyaluronic acid compared to reference standard gel, 0.8% hyaluronic acid gel. Furthermore, immunohistochemical examination of healed wounds, in high molecular weight hyaluronic acid gel treated wounds revealed significant increases in macrophages, fibroblast migration, collagen regeneration, and epithelization compared with the reference standard gel and 0.8% hyaluronic acid gel.

Conclusion:

The new oral high molecular weight hyaluronic acid gel can improve the impaired healing of diabetic wounds and could be useful in treating oral ulcerations. This study was supported by University Teknologi MARA, DANA Grant 5/3/DST(11/09).

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

PROCESSED ALLOGENOUS DENTINE AS A SCAFFOLD FOR BONE HEALING

Author:

N.M. AL-NAMNAM, P. SHANMUHASUNTHARAM, K.O. HA, and C.H. SIAR, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

(i) to assess the osteo-compatibility of dentine in vivo and its ability to form union with host bone by osseous replacement resorption ; (ii) to evaluate the ability of liquid nitrogen treated allogenic dentine to accelerate bone healing compared to normal healing in empty defect, and (iii) to compare quantitatively the amount of new bone formation in the allogeneous dentine treated defect to autogenous bone treated defect in order to gain further insight into their integration with host bone.

Methods:

70 mg of allogeneous dentine from each tooth of four euthanized New Zealand White rabbits was treated with liquid nitrogen for 2 weeks. In sixteen rabbits, a defect (diameter: 5 mm) was created in each femur for grafting with either allogeneous dentine (experimental groups) or autogenous bone (positive control), and in another eight rabbits a defect (diameter: 5 mm) was created in each femur and left empty (negative control). The rabbits were sacrificed at 2, 4, 8 and 12-week intervals.

Results:

Histologically, dentine-bone union with osseous replacement resorption has been achieved increasing with time with no signs of inflammation. Histomorphometrically, at 2, 4, 8 and 12 weeks the mean percentage of formed bone in the positive control group was slightly higher than that in the experimental group. Whereas, the mean percentage of the formed bone was much higher in the experimental groups than that in the negative control groups at 2 and 4 weeks. Histomorphometric analysis showed there was no significant difference in bone regeneration between the groups ($p>0.05$). However, the difference was clinically significant between the experimental and negative control groups at 2 and 4 weeks.

Conclusion:

Results suggest that the liquid nitrogen-treated dentine is osteo-compatible and effective as a bone substitute for accelerating bone repair.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

USE OF LIQUID NITROGEN-TREATED AUTOGENOUS DENTINE AS BONE SUBSTITUTE

Author:

B.K. ATIYA, K.O. HA, P. SHANMUHASUNTHARAM, and C.H. SIAR, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

(i) to determine the efficacy of liquid nitrogen- treated autogenous dentine and autogenous bone on bone regeneration by comparing the quantity of newly formed bone in both groups, and (ii) to compare the quantity of newly formed bone by autogenous dentine treated defect with empty surgical defect.

Methods:

Twenty New Zealand White male rabbits were used. Autogenous dentine was treated with liquid nitrogen at -196°C for 20 minutes. In sixteen rabbits, a bone defect (diameter 5mm) was created in each femur and randomly assigned for autogenous dentine (experimental groups) and autogenous bone grafts (positive control). In four rabbits bone defect (5mm diameter) was created in each femur and left empty (negative control). The rabbits were sacrificed at 2, 4, 8 and 12 weeks.

Results:

Clinically post-operative healing was uneventful. Microscopically, at 2 weeks the newly-formed bone was observed in both the experimental and positive control groups, with union to both graft tissue and host bone. The newly-formed bone was denser in autogenous dentine treated defects than that in negative control groups.

At 2,4,8 and 12 weeks, histomorphometric analysis showed no significant difference in the quantity of the newly-formed bone between the experimental and positive control groups ($p>0.05$). there was no significant difference between the experimental and negative control groups; however, there was clinically significant greater new bone formation in experimental than that in negative control groups. ($p>0.05$).

Conclusion:

Present results suggest that liquid nitrogen- treated autogenous dentine graft has bone regeneration property. The bone regeneration property of treated autogenous dentine is similar to that of the autogenous bone. Treated autogenous dentine graft can be used as bone substitute for enhancing bone regeneration.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

ROLE OF CANDIDA ALBICANS IN PRE-CANCEROUS ORAL LESIONS

Author:

M. MOHD BAKRI, L. HORNE, M. FISHER, A.R. HOLMES, R.D. CANNON, and A.M. RICH,
University of Otago, Dunedin, New Zealand

Oral squamous cell carcinoma (OSCC) can remain undiagnosed until advanced and potentially lethal. Previous research has implicated an association between the presence of *Candida albicans* and the progression of leukoplakias to OSCC. Alcohol may contribute to oral cancer via its conversion to acetaldehyde, a known carcinogen, which is also a product of *C. albicans* metabolism.

Objectives:

To identify the *C. albicans* genes responsible for acetaldehyde production, and to detect *C. albicans* acetaldehyde-producing gene expression in archival formalin-fixed-paraffin-embedded (FFPE) samples from leukoplakia biopsies.

Methods:

Two *C. albicans* genes, *ADH1* and *ADH2*, were cloned and expressed in the model yeast *Saccharomyces cerevisiae*. Adh1p and Adh2p polypeptide expression was confirmed by Western blot and ethanol utilisation was assayed in cell extracts. FFPE samples were from four groups: normal oral mucosa, non-dysplastic leukoplakia, chronic hyperplastic candidiasis (CHC) and non-CHC dysplastic leukoplakia. *Candida* was detected by histology and immunocytochemistry. *ADH1* and rRNA mRNAs were detected by RT-PCR and qRT-PCR.

Results:

Extracts from the Adh1p-expressing *S. cerevisiae* strain but not the Adh2p-expressing strain, or an empty vector control strain, possessed ethanol utilisation activity. *Candida* was detected histologically in 12 of 20 FFPE samples showing dysplastic leukoplakia or CHC, but not in the non-dysplastic leukoplakias. qRT-PCR confirmed high levels of *C. albicans ADH1* gene expression in CHC biopsies.

Conclusions:

The *C. albicans ADH1* gene catalysed the conversion of ethanol to acetaldehyde. *ADH1* mRNA was detected in dysplastic leukoplakia and CHC FFPE samples. We gratefully acknowledge a University of Malaya postgraduate scholarship to Ms Bakri and funding from the New Zealand Dental Association Research Foundation.

Saturday, April 4, 2009: 1:45 p.m. - 3 p.m.

Location: Exhibit Hall D (Miami Beach Convention Center)

VERTICAL DISPLACEMENT OF DISTAL-EXTENSION RIDGES BY THREE DIFFERENT IMPRESSION TECHNIQUES

Author:

O. NABEEL, S.F. AHMAD, and Y.T. ARIFFIN, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To compare clinically the vertical displacement of distal extension ridges of two different impression techniques to altered cast technique (ACT), using polyvinyl siloxane (PVS) regular body as impression material.

Method:

Fifteen subjects participated in the study. Cast produced of the irreversible hydrocolloid impression taken with special tray of each patient was used as control. The first and the second impression technique (M and C) were with special tray, which used modelling wax and casting wax as spacer at edentulous area respectively. Third impression was ACT. Four standardized areas were identified on each left and right ridge on the cast; 5mm distal to last abutment tooth, midway between 5mm and centre of retromolar pad, central of retromolar pad, and buccal shelf. Three standardized points of each area were measured using Digimatic indicator (Mitutoyo, Japan). Comparisons on the mucosal vertical displacement were done via the mean differences (MDs) between the three different impressions and the control, measurements were in millimetres. Data were analysed with repeated measures ANOVA and Friedman tests.

Results: MDs and P-value in different locations were:

LOCATION	LEFT				RIGHT			
	MDs			P-value ^a	MDs			P-value ^a
	M	C	ACT		M	C	ACT	
5mm from the abutment	-0.340	-0.019	-0.135	0.524	-0.503	-0.354	-0.036	0.766
Midway	-0.396	-0.096	-0.016	0.572	-0.377	-0.044	0.073	0.574
Retromolar pad	-0.254	0.085	-0.061	0.705	-0.596	0.050	-0.256	0.498
Buccal shelves	-0.007	0.172	0.077	0.862	-0.061	0.109	-0.172	0.790

a. Significance level 0.05

Regardless of the location, M gives more vertical displacement compared to other techniques on both left, right side.

Conclusion:

Although there were differences in the vertical displacement of the mucosa using different impression techniques, they were small and not significant. This indicates that M and C are comparable to ACT with PVS regular body impression material. (Supported by vote P0213/2007A, University of Malaya).

Thursday, April 2, 2009: 2 p.m. - 3:15 p.m.

Location: Exhibit Hall D (Miami Beach Convention Center)

CYTOTOXICITY OF POLYURETHANE DIMETHACRYLATE DERIVED FROM PALM OIL POLYOL

Author:

N.H. ABU KASIM¹, F. AL-SANABANI¹, S. MUHAMAD², and S.N. GAN¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Institute of Medical Research, Kuala Lumpur, Malaysia

Objective:

The aim of this study was to investigate the cytotoxicity effect of polyurethane dimethacrylate monomer derived from palm oil polyol (PUDMA) and 2 experimental composite resins based on these monomer PUDMA- based composites) compared to an experimental Bis-GMA/TEGDMA-based composite and EsthetX flowable composite (Dentsply, Caulk, USA).

Methods:

The experimental composite resins were prepared by mixing 0.25% and 0.75% by weight camphorquinone and ethyl (4-dimethyl amino) benzoate with 60% filler for each of the following monomer systems; I) PUDMA monomer (PUDMA-based composite resin), II) Bis-GMA/TEGDMA at ratio of 75:25 by weight, III) PUDMA/BisGMA-TEGDMA at ratio of 50:50 by weight. Eight disk specimens of 2mm thick and 8mm in diameter were prepared from the PUDMA monomer and each experimental composites and EsthetX. All specimens were cured for 40 seconds on both sides. Mouse fibroblast cell lines (L-929) and MTS assay were used to evaluate the cytotoxicity effect of all composites extraction according to ISO 1099312:2002. Data was analysed using ANOVA and multiple comparison was carried out, $P=.05$

Results:

The percentage of viable cells was lowest in the PUDMA monomer, $P < .05$. However, it was evident that the percentage of viable cells in the PUDMA/BisGMA-TEGDMA, Bis-GMA/TEGDMA and EsthetX flowable composite was high and no statistical difference were detected.

Conclusion:

PUDMA derived from palm oil polyol showed equally high percentage of viable cells compared to Bis-GMA/TEGDMA-based composites and EsthetX flowable composite. This study was supported by e-Science Fund, Ministry of Science and Innovation, Malaysia 03-01-03SF0190

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

PORPHYROMONAS GINGIVALIS fimA I,II GENOTYPES IN MALAY PERIODONTITIS PATIENTS

Author:

A. AL-ALIMI¹, T. TAIYEB ALI¹, and W.H.A. WAN HARUN², ¹University of Malaya, Kuala Lumpur, Malaysia, ²University of Malaysia, Kuala Lumpur, Malaysia

Objective:

To determine the prevalence Pg fimA I and II genotypes in a Malay ethnic group and to relate this presence to chronic periodontitis.

Method:

15 periodontitis and 15 periodontally healthy subjects aged 25 years and above were selected for the current study. Periodontitis subjects were selected if they possessed pocket depths of ≥ 5 mm at ≥ 4 sites. Healthy subjects were those with probing pocket depths ≤ 3 mm and no evidence of attachment loss. Clinical parameters such as PI, BI and GI, PPD, and probing attachment loss measurements were scored for each subject. The numbers of missing teeth were also noted. Pg fimA types I and II were identified by polymerase chain reaction followed by gel electrophoresis.

Results:

Pg was more prevalent in subjects with periodontitis (26.7%) as compared to the healthy subjects (6.7%). In periodontitis subjects, both genotypes of Pg fimA (type I and II) were detected in of 20% and 33.33% of patients respectively. On the other hand, Pg fimA type I was detected only in 6.67% of healthy individuals while fimA genotype II was not observed in this group. Pg positive individuals were shown to harbor fimA types I and II bacteria almost equally in each category of probing pocket depth and attachment loss measurements. Both genotypes of bacteria were found only in pocket depths of more than 3 mm. For the GI, BI and PI categories, both genotypes of Pg were associated with these indices. The presence of genotype fimA type II was greater where plaque accumulation was greater (>1).

Conclusions:

Pg was detected in periodontally diseased and healthy subjects. However it was more predominant in the diseased subjects. Pg fimA I was prevalent in both groups whereas Pg fimA II was identified in diseased subjects only.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

THE-EFFECT-OF PHENOTYPIC-SWITCHING OF *CANDIDA KRUSEI* ON ITS SUSCEPTIBILITY TOWARDS FLUCONAZOLE-AND-VORICONAZOLE

Author:

A. HAFIZ, A. FATHILAH, and W. HIMRATUL-AZNITA, Department of Oral Biology, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objective:

To compare the effect of phenotypic switching of *Candida krusei* on its susceptibility towards fluconazole and voriconazole

Methods:

Candida krusei was revived from ATCC stock and cultured using spreading technique on Yeast Extract Potato Dextrose (YEPD) agar containing 5 mg Phloxine B dye. Following a 5-days incubation period, colonies showing a switch in the colour from the original were counted and considered as having a phenotypic switch in the first generation. These colonies were then subcultured on new media plates. Phenotypic switching of *Candida krusei* was repeated and observed for four generations. Each generation was tested for their response to fluconazole and voriconazole disks on Mueller-Hinton (MH) agar plate and incubated for 24 hours at 37°C.

Results:

Candida krusei in the first to the third generation was found to be resistant to fluconazole. In contrast, a mild susceptibility was observed in the fourth switched generation. Alternatively, *Candida krusei* were sensitive for all switched generations towards voriconazole. However, the sensitivity level of *Candida krusei* was found to increase relative to the number of switched generations, as observed by the bigger clearance zone in the antifungal disc diffusion experiment.

Conclusion:

The susceptibility of *Candida krusei* towards the antifungal agents fluconazole and voriconazole was found to be greatly affected by its phenotypic status.

Location: Grand Ballroom (2nd Floor) (Shangri-La Hotel)

THE RELATIONSHIP BETWEEN MATERNAL AND CHILD DENTAL ANXIETY IN MALAYSIA

Author:

R. ESA¹, J. MARHAZLINDA², H. AWANG³, Z.Y.M. YUSOF¹, and M.N. MARIANI⁴, ¹Department of Community Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²Informatics Unit, University of Malaya, Kuala Lumpur, Malaysia, ³Department of Children's Dentistry and Orthodontics, University of Malaya, Kuala Lumpur, Malaysia, ⁴Faculty of Education, University of Malaya, Kuala Lumpur, Malaysia

Dental anxiety is a worldwide problem affecting children, adolescents and adults.

Objectives:

To assess dental anxiety among 5-6 year-old preschool children and their mothers, and to investigate the relationship between maternal and child dental anxiety.

Method:

A cross-sectional study was conducted on 873, 5-6 year-old children attending 25 kindergartens (government and private) in 2 large districts in Selangor, Malaysia. A multi-staged and cluster random sampling was employed. Children's dental anxiety was assessed using the faces version of the Modified Child Dental Anxiety Scale (MCDASf). A face-to-face interview was performed for all the children in their respective kindergartens. Prior to the study their mothers were given a questionnaire comprising a sociodemographic profile and the Modified Dental Anxiety Scale (MDAS). Only mothers who responded and consented to participate together with their children were included in the study.

Results:

The mean dental anxiety (MCDASf) score for the children was 16.89 [95% CI (16.60, 17.18)]. The mean maternal dental anxiety (MDAS) score was 11.84 [95% CI (11.54, 12.14)]. No significant correlation was found between maternal and child dental anxiety [Spearman's rho, ($r = -0.015$, $p > 0.05$)]. Extraction, injection and filling were more anxiety-provoking for children. Similarly, maternal anxiety was expressed with regard to tooth drilling and local anaesthetic injection.

Conclusions:

This study indicated that there was no relationship between maternal and child dental anxiety in this population. Further studies need to be conducted to confirm the finding.

Acknowledgement: This study was funded by a University of Malaya Grant (FS 155/2008B)

PERIODONTAL TREATMENT NEEDS AMONG MALAYSIAN TYPE 2 DIABETICS

Author:

R.D. VAITHILINGAM, R. RENUKANTH, M. NORDIN, S. RAHMAN, G.C. HORNBUCKLE, T.B. TAIYEB-ALI, and S.P. CHAN, University of Malaysia, Kuala Lumpur, Malaysia

Objectives:

1) To determine periodontal treatment needs and oral health awareness of a selected population of Malaysian Type 2 diabetic patients. 2) To investigate diabetes-related factors in relation to periodontal treatment needs in these patients.

Methods:

A convenient sample comprising 94 patients with type 2 diabetes (T2D) from the diabetic clinic, University of Malaya Medical Centre, were examined using the Community Periodontal Index of Treatment Needs (CPITN). Subjects were divided into periodontally diseased (PD) (CPITN \geq 3) and periodontally healthy (PH) (CPITN \leq 2) groups. They were interviewed regarding socio-demographic data and oral health awareness. Medical information (HbA1c, BMI, medication type) was obtained from medical records.

Results:

52 (55.3%) subjects had periodontal disease as compared to 42 (44.7%) subjects who were periodontally healthy. 17 (18.1%) subjects required advanced periodontal treatment (pockets \geq 6mm; CPITN=4). Male diabetic patients were more likely to have advanced periodontal disease (CPITN=4) as compared to female subjects ($p<0.05$). There were 19 (65.5%) PD subjects with HbA1c levels in the range of 7 to 8.5 as compared to 10 (34.5%) PH subjects ($p>0.05$). Among the PD subjects, pockets more than 4mm were more prevalent in the posterior teeth. Patients with advanced periodontal disease (CPITN=4) were more likely to be on a combination of insulin and oral drugs ($p<0.05$). PD diabetic patients were aware that they had mobile teeth ($p<0.001$) and gum disease ($p=0.004$).

Conclusion:

18.1% of this selected population of Malaysian Type 2 diabetic subjects requires advanced periodontal treatment. Male diabetic patients and patients on combination of insulin and oral diabetic drugs are more likely to require advanced periodontal treatment. Diabetic patients with periodontal disease were aware of the presence of mobile teeth and gum disease. (Study supported by University of Malaya Research Grant, RG 066/09HTM).

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

NOTCH EXPRESSION PATTERNS AND AMELOBLASTOMA PHENOTYPES

Author:

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¹Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²Matsumoto Dental University Graduate School of Oral Medicine, Shiojiri, Japan, ³Graduate School of Medicine, Dentistry & Pharmaceutical Sciences, Okayama University, Okayama, Japan, ⁴Institute for **Medical Research, Kuala Lumpur, Malaysia**

Background:

Notch gene family encodes four receptors (Notch1-4) that are involved in diverse processes including odontogenesis. Dysregulation of this signaling pathway has been implicated in tumorigenesis but its role during the development and progression of ameloblastoma remains unclear.

Objective:

To explore the existence of a correlation between Notch expression and ameloblastoma phenotypes. Methods: Notch receptors (1, 2, 3 and 4) and ligands (Jagged1, 2 and Delta1) were examined immunohistochemically in unicystic (UA, n=22), solid/multicystic (SA, n=23) and recurrent ameloblastoma (RA, n=19).

Results:

Notch4 showed high expression in SA (n=19/23; 82.6%) compared to UA (n=1/22; 4.5%) or RA (n=10/19; 52.6%) (p<0.05) suggesting positive correlation between Notch4 signaling pathway and ameloblastomas with a solid/multicystic phenotype. Underexpression of Notch ligands (Jagged1 and Delta1) compared to their receptors (Notch1, 3 and 4) (p<0.05), and nonreactivity for Notch2 and Jagged2 in all 3 subsets suggests that ameloblastoma tumor epithelium belongs to an earlier stage of cellular differentiation (equivalent to the inner enamel epithelium of the developing tooth germ) before lineage commitment.

Conclusions:

Present findings suggest that Notch signaling molecules play differing roles in the acquisition of different ameloblastoma phenotypes.

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

DETECTION OF PERIODONTITIS ASSOCIATED SALIVARY PROTEINS AMONG DIABETICS

Author:

Z.H.A. RAHIM, H.H. CHAN, O.H. HASHIM, P.C.R. RENUKANTH, and T.B. TAIYEB ALI, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The objective of this study was to profile the salivary proteins of diabetics with and without periodontitis using two-dimensional gel electrophoresis (2-DE).

Methods:

Twelve diabetics who sought oral examination for periodontitis at the diabetic clinic, University of Malaya Medical Centre and gave their consent to participate in the study were recruited. Seven of the diabetics were categorised with moderate to advanced periodontitis and five without periodontitis using the CPI score. Unstimulated whole saliva was collected between 9 am and 11 am from the patients by spitting into ice-chilled beakers. The volume and time taken to collect the saliva were recorded. Proteins of the collected saliva were precipitated using TCA, dissolved in rehydration buffer and subjected to 2-DE. The separated proteins were analyzed and pattern-matched between individuals using the PDQuest software. The salivary proteins were accorded with spot identification numbers as determined by the programme.

Results:

The flow rate of unstimulated whole saliva in diabetics with periodontitis was 0.322 ± 0.249 mLmin⁻¹, while that of diabetics without periodontitis was 0.221 ± 0.094 mLmin⁻¹ ($p > 0.05$). Several hundreds of protein spots were separated in the 2-D gels. Of these, 114 matched those in the PDQuest database with 8 spots exclusive to the diabetics without periodontitis, 83 spots to the diabetics with periodontitis and 23 spots common to both groups.

Conclusion:

The salivary protein profiles of diabetics with periodontitis appeared to be different from those of diabetics without periodontitis. This warrants further studies to identify and validate the proteins that are associated with periodontitis.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

BOND STRENGTHS OF SOFT-LINERS TO CHEMICALLY DIFFERENT DENTURE BASE POLYMERS

Author:

O.H. BAYATI, International Medical University (IMU), Kuala Lumpur, Malaysia, S. AHMAD, University of Malaya, Kuala Lumpur, Malaysia, and N. YUNUS, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To compare tensile bond strengths (TBS) of four silicone soft liners to two chemically different denture base polymers (PMMA and UDMA).

Methods:

Four silicone soft liners (GC Soft(GS), GC Extrasoft (GXS), Silagum Comfort (SC) and Mollosil Plus (MP)) were processed to PMMA (IMPACT, Dental exports of London, England) and UDMA (ECLIPSE, DENTSPLY, USA) denture base polymers following the manufacturers' recommended relining method. For each soft liner-denture base combination group, 10 specimens were prepared using a custom-made brass mould. The bonding area was 10 mm in diameter and 3mm in thickness. The specimens were stored in distilled water (37°C) for 24 hours before testing. The specimens were tested for TBS using universal testing machine (Shimadzu, Japan) and mode of failure was determined using stereomicroscope at X 10 magnification (Kyowa SD-2PL, Japan). Data were analyzed using Kruskal-Wallis and Mann-Whitney tests.

Results:

For PMMA group, there were significant differences in TBS amongst soft lining materials ($p < 0.05$), except, between GS (1.94 MPa) and GXS (2.04 MPa). While, in UDMA group, there was non-significant difference in TBS between all soft liners except, for MP which showed significant lower TBS (0.08 MPa). All soft lining materials showed a significantly higher TBS to PMMA than to UDMA ($p < 0.05$), except for SC which showed no significant difference ($P > 0.05$). The mixed mode of failure was the most common in PMMA group. While, Adhesive mode of failure was the most common in UDMA group, except for Silagum Comfort was mostly adhesive in both groups.

Conclusions:

The silicone soft liners showed different TBS when used to reline PMMA compared when relined UDMA denture base polymer. Soft lining materials showed lower TBS to UDMA than to PMMA denture base polymer.

Saturday, July 17, 2010: 5 p.m. - 6:15 p.m.

Location: Exhibit Hall (CCIB)

RAPID WHOLE GENOME AMPLIFICATION FOR ORAL RINSE

Author:

G.H. KHOR, Faculty of Dentistry, University Teknologi MARA, Shah Alam, Malaysia, K.L. THONG, Institute of Post Graduate, University of Malaya, Kuala Lumpur, Malaysia, G.R.A. FROEMMING, Institute for Medical Molecular Biotechnology, Faculty of Medicine, Shah Alam, Malaysia, and R.B. ZAIN, Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia

Introduction:

Genomic DNA is normally obtained from blood, swabs brushes, and scraping of buccal cells are sources of genomic DNA for molecular analyses. Therefore, less invasive and more cost-efficient procedures for collecting genomic DNA are needed for a large epidemiological study.

Objective:

The study described a rapid method for obtaining the high-quality whole genomic DNA from buccal cells in the oral rinses of patients. Such approach has high acceptability and allows for a large number of PCR assays from a single sample.

Method:

In this study, twenty-two subjects vigorously swished their mouth with normal saline and expelled the oral rinse into a centrifuge tube. Then, DNA was isolated from all exfoliated buccal cells in the oral rinse samples by using saliva DNA isolation kit (Norgen, USA). The quality and purity of extracted DNA were analyzed by using NanoDrop Spectrophotometer. The extracted DNA was amplified for p53 genes using exon 4 as a primer. The presence of PCR products were identified by bioanalyzer and electrophoresis gel. The PCR bands in the electrophoresis gel were scanned by Image Analyser.

Result:

The average yield of extracted DNA was 27 ng/µl. The electrophoretic analysis of the extracted DNA showed clear and detectable levels of high molecular weight genomic DNA.

Conclusion:

DNA from the exfoliated buccal cells in the oral rinsed samples was successfully extracted in this study. The results also indicated that this procedure may be suitable for large population's study in which oral rinse sample can be collected easily from the subjects and stored for months prior DNA molecular applications.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

PROTEOMIC ANALYSIS OF WHOLE SALIVA FROM PATIENTS WITH ORAL CANCER

Author:

J. KALA, Faculty of Dentistry, Kuala Lumpur, Malaysia, O.H. HASHIM, University of Malaya Centre for Proteomics Research, University of Malaya, Kuala Lumpur, Malaysia, R.B. ZAIN, Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia, and Z.H.A. RAHIM, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The objective of this study was to compare the protein profiles of unstimulated whole saliva from patients with oral cancer with those of healthy control subjects using two-dimensional gel electrophoresis (2-DE).

Methods:

Four patients with oral cancer and four healthy subjects of matching age and sex were recruited in this study. Their unstimulated whole saliva, collected by spitting, was concentrated using TCA precipitation, dissolved in rehydration buffer and subjected to 2-DE separation. The separated proteins were analyzed, quantified and pattern-matched between individuals using computerized image analysis software. Identification of the proteins was performed by spot-pattern comparison with the previously established normal human unstimulated whole saliva proteome.

Results:

Our results demonstrated five unidentified protein spots that were exclusively detected in the 2-DE profiles of the patients' whole saliva. Among the proteins that were commonly present in the normal human whole saliva proteome, cystatin A, cystatin S and cystatin SA were not detected in the 2-DE profile of one of the oral cancer patients. Analysis of spot volumes of the proteins that were secreted in the unstimulated whole saliva showed the enhanced secretion of alpha 1-antitrypsin, C3 complement precursor, transthyretin and actin cytoplasmic 2, and reduced secretion of zinc alpha2-glycoprotein (1 isoform), parotid secretory protein, carbonic anhydrase VI and cystatin S in patients with oral cancer compared to those of the controls.

Conclusion:

Proteomics analysis of the unstimulated whole saliva of patients with oral cancer showed presence of unidentified proteins that were not normally secreted in the unstimulated whole saliva of healthy controls. Eight proteins that were commonly detected in the unstimulated whole saliva of healthy controls were also found to be aberrantly secreted by the patients.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

RAPID WHOLE GENOME AMPLIFICATION FOR ORAL RINSE

Author:

G.H. KHOR, Faculty of Dentistry, University Teknologi MARA, Shah Alam, Malaysia, K.L. THONG, Institute of Post Graduate, University of Malaya, Kuala Lumpur, Malaysia, G.R.A. FROEMMING, Institute for Medical Molecular Biotechnology, Faculty of Medicine, Shah Alam, Malaysia, and R.B. ZAIN, Oral Cancer Research and Coordinating Centre, University of Malaya, Kuala Lumpur, Malaysia

Introduction:

Genomic DNA is normally obtained from blood, swabs brushes, and scraping of buccal cells are sources of genomic DNA for molecular analyses. Therefore, less invasive and more cost-efficient procedures for collecting genomic DNA are needed for a large epidemiological study.

Objective:

The study described a rapid method for obtaining the high-quality whole genomic DNA from buccal cells in the oral rinses of patients. Such approach has high acceptability and allows for a large number of PCR assays from a single sample.

Method:

In this study, twenty-two subjects vigorously swished their mouth with normal saline and expelled the oral rinse into a centrifuge tube. Then, DNA was isolated from all exfoliated buccal cells in the oral rinse samples by using saliva DNA isolation kit (Norgen, USA). The quality and purity of extracted DNA were analyzed by using NanoDrop Spectrophotometer. The extracted DNA was amplified for p53 genes using exon 4 as a primer. The presence of PCR products were identified by bioanalyzer and electrophoresis gel. The PCR bands in the electrophoresis gel were scanned by Image Analyser.

Result:

The average yield of extracted DNA was 27 ng/ μ l. The electrophoretic analysis of the extracted DNA showed clear and detectable levels of high molecular weight genomic DNA.

Conclusion:

DNA from the exfoliated buccal cells in the oral rinsed samples was successfully extracted in this study. The results also indicated that this procedure may be suitable for large population's study in which oral rinse sample can be collected easily from the subjects and stored for months prior DNA molecular applications.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

BOND STRENGTHS OF SOFT-LINERS TO CHEMICALLY DIFFERENT DENTURE BASE POLYMER

Author:

O.H. BAYATI, International Medical University (IMU), Kuala Lumpur, Malaysia, S. AHMAD, University of Malaya, Kuala Lumpur, Malaysia, and N. YUNUS, University of Malaya, Kuala Lumpur, Malaysia

Objectives:

To compare tensile bond strengths (TBS) of four silicone soft liners to two chemically different denture base polymers (PMMA and UDMA).

Methods:

Four silicone soft liners (GC Soft(GS), GC Extrasoft (GXS), Silagum Comfort (SC) and Mollosil Plus (MP)) were processed to PMMA (IMPACT, Dental exports of London, England) and UDMA (ECLIPSE, DENTSPLY, USA) denture base polymers following the manufacturers' recommended relining method. For each soft liner-denture base combination group, 10 specimens were prepared using a custom-made brass mould. The bonding area was 10 mm in diameter and 3mm in thickness. The specimens were stored in distilled water (37°C) for 24 hours before testing. The specimens were tested for TBS using universal testing machine (Shimadzu, Japan) and mode of failure was determined using stereomicroscope at X 10 magnification (Kyowa SD-2PL, Japan). Data were analyzed using Kruskal-Wallis and Mann-Whitney tests.

Results:

For PMMA group, there were significant differences in TBS amongst soft lining materials ($p < 0.05$), except, between GS (1.94 MPa) and GXS (2.04 MPa). While, in UDMA group, there was non-significant difference in TBS between all soft liners except, for MP which showed significant lower TBS (0.08 MPa). All soft lining materials showed a significantly higher TBS to PMMA than to UDMA ($p < 0.05$), except for SC which showed no significant difference ($P > 0.05$). The mixed mode of failure was the most common in PMMA group. While, Adhesive mode of failure was the most common in UDMA group, except for Silagum Comfort was mostly adhesive in both groups.

Conclusions:

The silicone soft liners showed different TBS when used to reline PMMA compared when relined UDMA denture base polymer. Soft lining materials showed lower TBS to UDMA than to PMMA denture base polymer.

NOTCH EXPRESSION PATTERNS AND AMELOBLASTOMA PHENOTYPES

Author:

C.H. SIAR¹, K. NAKANO², K.S. CHUAH¹, H. NAGATSUKA³, K.H. NG⁴, and T. KAWAKAMI²,
¹Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²Matsumoto Dental University Graduate School of Oral Medicine, Shiojiri, Japan, ³Graduate School of Medicine, Dentistry & Pharmaceutical Sciences, Okayama University, Okayama, Japan, ⁴Institute for Medical Research, Kuala Lumpur, Malaysia

Background:

Notch gene family encodes four receptors (Notch1-4) that are involved in diverse processes including odontogenesis. Dysregulation of this signaling pathway has been implicated in tumorigenesis but its role during the development and progression of ameloblastoma remains unclear.

Objective:

To explore the existence of a correlation between Notch expression and ameloblastoma phenotypes.

Methods:

Notch receptors (1, 2, 3 and 4) and ligands (Jagged1, 2 and Delta1) were examined immunohistochemically in unicystic (UA, n=22), solid/multicystic (SA, n=23) and recurrent ameloblastoma (RA, n=19).

Results:

Notch4 showed high expression in SA (n=19/23; 82.6%) compared to UA (n=1/22; 4.5%) or RA (n=10/19; 52.6%) ($p<0.05$) suggesting positive correlation between Notch4 signaling pathway and ameloblastomas with a solid/multicystic phenotype. Underexpression of Notch ligands (Jagged1 and Delta1) compared to their receptors (Notch1, 3 and 4) ($p<0.05$), and nonreactivity for Notch2 and Jagged2 in all 3 subsets suggests that ameloblastoma tumor epithelium belongs to an earlier stage of cellular differentiation (equivalent to the inner enamel epithelium of the developing tooth germ) before lineage commitment.

Conclusions:

Present findings suggest that Notch signaling molecules play differing roles in the acquisition of different ameloblastoma phenotypes.

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

DETECTION OF PERIODONTITIS ASSOCIATED SALIVARY PROTEINS AMONG DIABETICS

Author:

Z.H.A. RAHIM, H.H. CHAN, O.H. HASHIM, P.C.R. RENUKANTH, and T.B. TAIYEB ALI, University of Malaya, Kuala Lumpur, Malaysia

Objective:

The objective of this study was to profile the salivary proteins of diabetics with and without periodontitis using two-dimensional gel electrophoresis (2-DE).

Methods:

Twelve diabetics who sought oral examination for periodontitis at the diabetic clinic, University of Malaya Medical Centre and gave their consent to participate in the study were recruited. Seven of the diabetics were categorised with moderate to advanced periodontitis and five without periodontitis using the CPI score. Unstimulated whole saliva was collected between 9 am and 11 am from the patients by spitting into ice-chilled beakers. The volume and time taken to collect the saliva were recorded. Proteins of the collected saliva were precipitated using TCA, dissolved in rehydration buffer and subjected to 2-DE. The separated proteins were analyzed and pattern-matched between individuals using the PDQuest software. The salivary proteins were accorded with spot identification numbers as determined by the programme.

Results:

The flow rate of unstimulated whole saliva in diabetics with periodontitis was 0.322 ± 0.249 mLmin⁻¹, while that of diabetics without periodontitis was 0.221 ± 0.094 mLmin⁻¹ ($p > 0.05$). Several hundreds of protein spots were separated in the 2-D gels. Of these, 114 matched those in the PDQuest database with 8 spots exclusive to the diabetics without periodontitis, 83 spots to the diabetics with periodontitis and 23 spots common to both groups.

Conclusion:

The salivary protein profiles of diabetics with periodontitis appeared to be different from those of diabetics without periodontitis. This warrants further studies to identify and validate the proteins that are associated with periodontitis.

Thursday, July 15, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

PERIODONTAL TREATMENT NEEDS AMONG MALAYSIAN TYPE 2 DIABETICS

Author:

R.D. VAITHILINGAM, R. RENUKANTH, M. NORDIN, S. RAHMAN, G.C. HORNBUCKLE, T.B. TAIYEB-ALI, and S.P. CHAN, University of Malaysia, Kuala Lumpur, Malaysia

Objectives:

1) To determine periodontal treatment needs and oral health awareness of a selected population of Malaysian Type 2 diabetic patients. 2) To investigate diabetes-related factors in relation to periodontal treatment needs in these patients.

Methods:

A convenient sample comprising 94 patients with type 2 diabetes (T2D) from the diabetic clinic, University of Malaya Medical Centre, were examined using the Community Periodontal Index of Treatment Needs (CPITN). Subjects were divided into periodontally diseased (PD) (CPITN \geq 3) and periodontally healthy (PH) (CPITN \leq 2) groups. They were interviewed regarding socio-demographic data and oral health awareness. Medical information (HbA1c, BMI, medication type) was obtained from medical records.

Results:

52 (55.3%) subjects had periodontal disease as compared to 42 (44.7%) subjects who were periodontally healthy. 17 (18.1%) subjects required advanced periodontal treatment (pockets \geq 6mm; CPITN=4). Male diabetic patients were more likely to have advanced periodontal disease (CPITN=4) as compared to female subjects ($p<0.05$). There were 19 (65.5%) PD subjects with HbA1c levels in the range of 7 to 8.5 as compared to 10 (34.5%) PH subjects ($p>0.05$). Among the PD subjects, pockets more than 4mm were more prevalent in the posterior teeth. Patients with advanced periodontal disease (CPITN=4) were more likely to be on a combination of insulin and oral drugs ($p<0.05$). PD diabetic patients were aware that they had mobile teeth ($p<0.001$) and gum disease ($p=0.004$).

Conclusion:

18.1% of this selected population of Malaysian Type 2 diabetic subjects requires advanced periodontal treatment. Male diabetic patients and patients on combination of insulin and oral diabetic drugs are more likely to require advanced periodontal treatment. Diabetic patients with periodontal disease were aware of the presence of mobile teeth and gum disease. (Study supported by University of Malaya Research Grant, RG 066/09HTM).

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

STRUCTURAL AND COMPOSITIONAL CHARACTERIZATION OF SILVERFIL AMALGAM

Author:

C. RAMASINDARUM, Conservative Dentistry, University of Malaysia, Kuala Lumpur, Malaysia, N.H. ABU KASIM, Dept. of Conservative Dentistry, University of Malaysia, Kuala Lumpur, Malaysia, V. BALAKRISHNAN, Department of Physics, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia, and M.A. YARMO, School of Chemical Science and Food Technology, University National of Malaysia, Bangi, Malaysia

SilverFil (Silverfil dental Products, Malaysia) is another commercially available dental amalgam; however it is based on silver and mercury only. It is claimed that upon amalgamation, there is no excess mercury in SilverFil.

Objectives:

The objectives of this study were to determine the structural state and chemical composition of the starting materials and presence of mercury in the resulting amalgam.

Methods:

All the starting materials of SilverFil and the SilverFil amalgam specimens were characterized using Field Emission Scanning Electron Microscopy (FESEM-EDX), X-Ray Diffraction (XRD) and X-Ray Photoelectron Spectroscopy (XPS).

Results:

The FESEM images of the amalgam shows silver-mercury (Ag-Hg) clusters. The elemental mapping of SilverFil™ shows good distribution of Ag and Hg. The EDX analysis showed that all the chemical composition of the starting materials contain no and consist of only Ag and Hg. These results agreed concurred with the XRD analysis. The XRD analysis also revealed that the chemical composition of SilverFil is similar to naturally occurring mineral called "Moschellandsbergite". The XPS analysis showed that there was no free mercury (Hg⁰) present in the starting material. When the resulting amalgam was analysed, the binding energy of Hg(4f) were 101.8eV and 100.6eV confirming the presence of bonded mercury to oxygen (HgO).

Conclusion:

It can be concluded that there was no free mercury present in SilverFil.

Saturday, March 19, 2011: 1:45 p.m. - 3 p.m.

Location: Hall C (San Diego Convention Center)

Presentation Type: Poster Session

VALIDITY OF THE FACT-H&N AMONG ORAL CANCER PATIENTS IN MALAYSIA

Author:

J.G. DOSS¹, W.M. THOMSON², B. DRUMMOND², and R. RAJA LATIFAH¹, ¹Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, ²University of Otago, Dunedin, New Zealand

Objectives:

To assess the cross-sectional construct validity of the FACT-H&N (v 4.0) questionnaire for Malaysian oral cancer patients.

Methods:

A cross-sectional study of adults newly diagnosed with oral cancer. HRQOL data were collected using the FACT-H&N (v 4.0), a global question and a supplementary set of eight questions (maq) obtained earlier in pilot work.

Results:

A total of 76 patients (61.8% female; 23.7% younger than 50) participated. Most (96.1%) had oral squamous cell carcinoma; two-thirds were in stages III or IV. Patients' mean FACT summary (FACT-G, FACT-H&N, FACT-H&N TOI and FHNSI) and subscale (pwb, swb, ewb, fwb, and hnc) scores were towards the higher end of the range at baseline. Equal proportions (36.8%) of participants rated their overall HRQOL as 'good' or 'average'; fewer than one-quarter as 'poor', and only 2 as 'very good'. All six FACT summary and subscale scores had moderate to good internal consistency. Subscale Cronbach alpha values were acceptable. Known-groups validity was noted between 1) FACT-H&N summary mean scores, the hnc subscale and the maq scores with patients' self-rated HRQOL groups and 2) FACT-H&N summary and the pwb subscale score with the extent of tumor. For all summary scales, the 'very poor/poor' self-rated HRQOL differed significantly from the 'good/very good' group. All FACT summary scales correlated strongly with each other ($r > 0.75$). Summary scales like FACT-H&N, FACT-G and FACT-H&N TOI showed convergent validity ($r > 0.90$) but little discriminant validity. The discriminant validity of the FHNSI improved with the addition of the maq. All FACT subscales showed better discriminant than convergent validity with maq.

Conclusion:

The FACT-H&N summary scales and most subscales demonstrated adequate cross-sectional construct validity and thus appear appropriate for further use among oral cancer patients in Malaysia. This research was supported by the University of Malaya Research Grant (UMFS337/2007C)

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

RELATIONSHIP BETWEEN FACIAL MEASUREMENTS AND WIDTH OF MAXILLARY ANTERIOR TEETH

Author:

Z.M. ISA¹, O.F. TAWFIQ¹, N.M. NOOR², N.A. ABDULLAH¹, and O.M. RIJAL¹, ¹University of Malaysia, Kuala Lumpur, Malaysia, ²University of Malaysia, Johor Baru, Malaysia

Statement of problem. In rehabilitating edentulous patients, the selection of appropriate size of is difficult when preextraction records are missing.

Objectives:

To investigate the relationships between some facial dimensions and combined maxillary anterior teeth width to potentially provide a guide for tooth selection.

Methods:

Sixty fully dentate Malaysian adults (18-36 years) with well aligned maxillary anterior teeth and minimal attrition participated in this study. Representing 2 ethnic groups (Malay and Chinese) with well aligned maxillary anterior teeth and minimal attrition participated in this study. Standardized digital images of the face, viewed frontally, were recorded. Image analysis software was used to determine the interpupillary distance (IPD), innercanthal distance (ICD) and interalar width (IA). The straight distance between left and right maxillary canine-tips (TTS), the curved distance between the left and right canine distalproximal surfaces, along the labial surface (DDC) and summation of the mesiodistal width of maxillary 6 anterior teeth (CA) were measured directly from subjects' dental casts using digital calipers and dental tape. Regression analyses were conducted to measure the strength of the associations between the variables ($\alpha=.10$).

Results:

There was strong correlation between the facial measurements and the teeth measurements (correlation coefficient r ranging from 0.847 to 0.996). The highest 3 correlations were found between IPD with CA and TTS ($r = 0.974$ and 0.967 respectively) and between ICD and DDC ($r = 0.996$).

Conclusion:

The IPD and ICD may suggest reliable predictors for the combined maxillary anterior teeth width which may guide the selection of artificial anterior teeth for Malaysian edentulous patients. This study was supported by a University of Malaya Postgraduate Research Grant (P0216/2007A).

Saturday, July 17, 2010: 5 p.m. - 6:15 p.m.

Location: Exhibit Hall (CCIB)

CEMENTUM DISTRIBUTION OF NATURAL TEETH OPPOSING IMPLANT-BORNE BRIDGEWORK

Author:

C.H. SIAR, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, C.K. PUA, Pua & Lai Dental Specialist Clinic, Klang, Malaysia, **K.H. NG**, Institute for Medical Research, Kuala Lumpur, Malaysia, G. ROMANOS, Eastman Dental Center, Rochester, NY, and C.G. TOH, International Medical University, Kuala Lumpur, Malaysia

Statement of the problem:

The efficacy of osseointegrated implants in supporting fixed prosthesis has been documented with high success rates. However little is known of their effects on the opposing natural dentition. The cementum layer investing the root of a tooth responds to occlusal forces either by undergoing resorption or apposition.

Objective:

To determine cementum distribution in natural teeth opposing implant-borne bridgework.

Methods:

Test samples consisted of maxillary second premolar-second molar jaw segments from four healthy adult male monkeys (*Macaca fascicularis*) that had implant-supported 3-unit bridge placement in the second premolar-second molar regions of their mandibles – one side for immediate loading and the other side for delayed loading, in a split mouth design. Control samples also consisted of maxillary second premolar-second molar jaw segments from two monkeys but without fixed prosthesis placement in the opposing mandibles. After 3 months of functional loading, the animals from both test and control samples were sacrificed, and the premolar-molar regions of the maxilla were harvested and processed for histometric analysis. Apical and cervical cementum widths were measured using an Image Analyser.

Results:

No significant differences were found in cementum distribution between test and control samples. However considerably more remodeling activity was observed in the test samples.

Conclusions:

Findings suggest that implant-borne bridgework do not produce adverse effects on the cementum layer of the opposing natural dentition.

Friday, July 16, 2010: 4:45 p.m. - 6 p.m.

Location: Exhibit Hall (CCIB)

WOUND HEALING POTENTIAL BY HYALURONATE GEL IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

Author:

F. AL-BAYATY¹, M. MASOOD¹, M. MASUD¹, M.I. ABU HASSAN¹, and M. ABDULLA²,
¹Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Malaysia, ²University of Malaya, Kuala Lumpur, Malaysia

Objective:

This study was conducted to investigate whether topical application of hyaluronate gels could improve the impaired wound healing in streptozotocin-induced diabetic rats.

Materials & Methods:

Four groups of adult male Sprague Dawley rats, 2 cm full-thickness skin wound were experimentally created on the posterior neck area of streptozotocin-induced diabetic rats (STZ). Wounds of Group 1 animals were topically treated with the vehicle, gum acacia in normal saline, as a placebo control group. Group 2 animals served as reference standard and treated topically with Intracel gel. Animals of Group 3, 4 were treated topically with new oral high molecular weight hyaluronic acid 240mg/100g gel, 0.8% hyaluronic acid gel respectively.

Results:

Macroscopically, the reference standard gel and the three gels-treated wounds were significantly healed faster in comparison to placebo control wounds group. Wound closure was significantly accelerated by topical application of high molecular weight hyaluronic acid compared to reference standard gel, 0.8% hyaluronic acid gel. Furthermore, immunohistochemical examination of healed wounds, in high molecular weight hyaluronic acid gel treated wounds revealed significant increases in macrophages, fibroblast migration, collagen regeneration, and epithelization compared with the reference standard gel and 0.8% hyaluronic acid gel.

Conclusion:

The new oral high molecular weight hyaluronic acid gel can improve the impaired healing of diabetic wounds and could be useful in treating oral ulcerations. This study was supported by University Teknologi MARA, DANA Grant 5/3/DST(11/09).

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

CYTOTOXICITY OF POLYURETHANE DIMETHACRYLATE DERIVED FROM PALM OIL POLYOL

Author:

N.H. ABU KASIM¹, F. AL-SANABANI¹, S. MUHAMAD², and S.N. GAN¹, ¹University of Malaya, Kuala Lumpur, Malaysia, ²Institute of Medical Research, Kuala Lumpur, Malaysia

Objective:

The aim of this study was to investigate the cytotoxicity effect of polyurethane dimethacrylate monomer derived from palm oil polyol (PUDMA) and 2 experimental composite resins based on these monomer PUDMA- based composites) compared to an experimental Bis-GMA/TEGDMA-based composite and EsthetX flowable composite (Dentsply, Caulk, USA).

Methods:

The experimental composite resins were prepared by mixing 0.25% and 0.75% by weight camphorquinone and ethyl (4-dimethyl amino) benzoate with 60% filler for each of the following monomer systems; I) PUDMA monomer (PUDMA-based composite resin), II) Bis-GMA/TEGDMA at ratio of 75:25 by weight, III) PUDMA/BisGMA-TEGDMA at ratio of 50:50 by weight. Eight disk specimens of 2mm thick and 8mm in diater were prepared from the PUDMA monomer and each experimental composites and EsthetX. All specimens were cured for 40 seconds on both sides. Mouse fibroblast cell lines (L-929) and MTS assay were used to evaluate the cytotoxicity effect of all composites extraction according to ISO 1099312:2002. Data was analysed using ANOVA and multiple comparison was carried out, P=.05

Results:

The percentage of viable cells was lowest in the PUDMA monomer, $P < .05$. However, it was evident that the percentage of viable cells in the PUDMA/BisGMA-TEGDMA, Bis-GMA/TEGDMA and EsthetX flowable composite was high and no statistical difference were detected.

Conclusion:

PUDMA derived from palm oil polyol showed equally high percentage of viable cells compared to Bis-GMA/TEGDMA-based composites and EsthetX flowable composite. This study was supported by e-Science Fund, Ministry of Science and Innovation, Malaysia 03-01-03SF0190

Thursday, July 15, 2010: 3 p.m. - 4:15 p.m.

Location: Exhibit Hall (CCIB)

WOUND HEALING POTENTIAL OF AFTA MAD AND CHLORINE DIOXID GEL

Author:

F. AL BAYATY¹, M. ABU HASSAN¹, M. MASUD¹, and M. ABDULLA², ¹Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia, ²Faculty of Medicine, University of Malaya, Selangor, Malaysia

Objective:

This study was conducted to investigate whether topical application of Afta mad and chlorine dioxid gel could improve the impaired wound healing closure in streptozotocin-induced diabetic rats.

Materials Methods:

Four groups of adult male Sprague Dawley rats, 2 cm full-thickness skin wound were experimentally created on the posterior neck area of streptozotocin-induced diabetic rats (STZ). Wounds of Group 1 animals were topically treated twice daily with 0.2 ml of vehicle, sterilized distilled water, as a placebo control group. Group 2 animals served as reference standard and treated topically twice daily with 0.2 ml of Intrasilite gel. Animals of Group 3 and 4 (experimental groups) were treated topically twice daily with 0.2 ml of each Afta mad and chlorine dioxid gel, respectively.

Results:

Macroscopically, the reference standard gel and the two gels-treated wounds were significantly healed faster in comparison to placebo control wounds group. Wound closure was significantly accelerated by topical application of Aftamad compared to reference standard gel and chlorine dioxid gel. Furthermore, histological staining of healed wounds, in Afta mad -treated wounds there were significant increases in blood vessels, fibroblast, collagen regeneration, and epithelization compared with the reference standard gel and chlorine dioxid gel.

Conclusion:

Afta mad can improve and enhance the impaired wound healing and increased the rate of cellular proliferation in diabetic rats, as ascertain by accelerate the rate of wound healing closure. This study was supported by University Teknologi MARA, DANA Grant 5/3/DST (11/09).

Friday, March 18, 2011: 2 p.m. - 3:15 p.m.

Location: Hall C (San Diego Convention Center)

Presentation Type: Poster Session

CANONICAL AND NONCANONICAL WNT LIGAND PROTEIN DISTRIBUTION IN AMELOBLASTOMA SUBTYPES

Author:

C.H. SIAR, Department of Oral Pathology, Oral Medicine & Periodontology, University of Malaya, Kuala Lumpur, Malaysia, K.S. CHUAH, Klinik Pergigian Chuah Seksyen 14, Petaling Jaya, Malaysia, and K.H. NG, formerly Unit of Stomatology, Institute for Medical Research, Kuala Lumpur, Malaysia

Objective:

Wnt gene family encodes 19 ligands and these molecules are involved in diverse biological processes including odontogenesis. The ameloblastoma is a benign, locally-invasive odontogenic epithelial neoplasm of putative enamel organ origin. Dysregulation of this signaling pathway has been implicated in the tumorigenesis of many human neoplasms and cancers but its role during the development and progression of ameloblastoma remains unclear. The aim of this study was to determine the distribution of canonical and noncanonical Wnt ligand proteins in the different ameloblastoma subtypes and to speculate on its significance.

Methods:

Canonical (Wnt-1, -2, and -8a), noncanonical (Wnt-5a, -6, -7a and -7b) and indeterminate (Wnt-2b and -9b) Wnt ligand proteins were examined immunohistochemically in unicystic (UA, n=19), solid/multicystic (SA, n=35), desmoplastic (DA; n=8) and recurrent ameloblastoma (RA, n=10).

Results:

Wnt ligand proteins were detected at varying intensity levels in the cytoplasm and cell membrane of pre-ameloblast-like and stellate reticulum-like cells of the ameloblastoma subtypes evaluated, and their pattern of distribution was heterogeneous. Among the canonical Wnt ligand proteins examined, Wnt-1 showed overexpression in SA (n=35/35; 100%), UA (n=19/19; 100%) and to a lesser extent in DA (n=5/8; 62.5%) and RA (n=7/10; 70.0%) ($p < 0.05$), thus suggesting a positive correlation between the canonical Wnt signaling pathway molecules and ameloblastoma subtypes. In contrast, noncanonical Wnt ligand proteins were mostly underexpressed or absent except for Wnt-5a which was detected primarily in UA (n=8/19; 42.1%) compared to SA (n=1/35; 2.9%), DA (n=0/8; 0%) or RA (n=0/10; 0%) ($p < 0.05$). Both Wnt ligand proteins (Wnt-2b and -9b) in the indeterminate group were not detected in all subtypes.

Conclusion:

Present findings suggest that Wnt signaling pathway is activated during ameloblastoma tumorigenesis and that the canonical Wnt ligand proteins are most probably the key molecules involved in this process.

Wednesday, March 16, 2011: 3:15 p.m. - 4:45 p.m.

Location: Room 29D (San Diego Convention Center)

Abstract

Oral Health Assessment among Elderly in Rumah Sri Kenangan, Pengkalan Chepa, Kelantan

Zulkarnain sinor; zulsinor@usim.edu.my

Objectives: to assess the oral health status among elderly in Rumah Sri kenangan, Pengkalan Chepa, Kelantan.

Method: This is cross sectional study. All available respondents present during data collection procedure were included in this study.

Results: From the study, 69.6% had poor oral hygiene. It also showed that 60.7% had no teeth with only 5.4% of the older people in the institution wearing denture. Majority of them, 91.1%, needs for denture construction to restore the eating function.

Conclusion: from this study, we conclude that oral health status among elderly living in Rumah Sri Kenangan was not satisfied.

Recommendations: From the study, we recommended a multi-sectorial approach to fulfilling the increased needs of oral health among the elderly especially for those staying in the institutions.

Abstract

Comparison between Conventional Health Promotion and Use of Cartoon Animation in Delivering Oral Health Education

Zulkarnain sinor; zulsinor@usim.edu.my

Introduction: Dental caries is a multi-factorial disease which can be prevented. Oral health education is part of the strategies in preventing dental caries, especially among preschool children. This study was conducted to evaluate the effectiveness and sustainability of cartoon animation as a medium in delivering oral health education.

Method: This is an intervention study involving 2 pre-schools which were selected randomly. One school received cartoon animation as a source of oral health education (intervention group) and for the other school; oral health education was given by dental nurses (control group). Oral hygiene knowledge, attitude and practice (KAP) score were assessed using guided questionnaires. Data was analyzed using SPSS version 12 by SPSS Inc. USA.

Result: Result shows that there is a statistical difference ($p < 0.05$) in KAP level between the groups and also between times.

Conclusion: From this study, it is concluded that cartoon animation as a medium was more effective and sustainable in delivering oral health education messages compared to traditional method.

Keywords: cartoon animation, oral health education, kindergarten

Abstract

Salivary Parameters and its Effect on the Occurrence of Dental Caries

Zulkarnain sinor; zulsinor@usim.edu.my

Objectives: to determine the association between salivary parameters and dental caries among adults attending government dental clinics in Kota Bharu, Kelantan.

Methods: this is cross sectional studies involving 220 respondents age 20 years-old and above who attend government dental clinics in Kota Bharu, kelantan. Respondents were randomly selected. Caries experiences were calculated using DMF (T) index. Salivary characteristics namely resting flow rate, resting pH, stimulated flow rate and buffer capacity, were assessed using BUFFER ®Test Kit by GIC Co. Data were analysed using SPSS version 12.0.

Results: the mean age was 34.4 (SD 11.91) years. Majority of respondents were malay (98.5%). The mean for resting flow rate was 0.37 (SD 11.91) ml/min, resting pH 6.3 (SD 0.70), stimulated flow rate 1.2 (SD 0.64) ml/min, and buffering capacity 5.9 (SD 3.05). Low resting pH value would increase the odds of having high DMF (T) by 1.12 (95% CI: 1.08, 1.16). Reduction of stimulated saliva flow rate would increase the odds of having high DMF (T) by 2.02 (95% CI: 1.25, 3.26).

Conclusion: reduce in saliva pH and stimulated flow rate will increase the risk for dental caries occurrences.

THE EFFECT OF A CURRICULUM CHANGE ON THE DISTRESS AND ATTITUDES OF STUDENTS TOWARDS THE LEARNING ENVIRONMENT

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The introduction of a new curriculum provides an opportunity to compare how a modification in the learning environment might influence stress and attitudes among students from both curricula. **Objectives:** This study compares the perceived distress and attitudes of students towards the learning environment and aims to determine the relationship between distress and attitudes between the two curricula and within the courses in the new curriculum. **Methods:** The Symptom Questionnaire (SQ) and the Dundee Ready Education Environment Measure (DREEM) were used to measure distress and attitudes towards the learning environment. The sample included 331 trainee Dental Nurses and Dental Technologists from both curricula. Data analysis was performed using SPSS ANOVA, independent t-test and correlation analysis. **Results:** The overall SQ mean score was significantly higher for students in the new curriculum indicating higher stress levels. The total DREEM scores between both curricula indicated an almost similar attitude towards the learning environment. Students in the new curriculum experienced a significantly higher anxiety although for both, depression is not a feature. Within the credit system the trainee Dental Technologists experienced a higher perceived distress, but within the conventional system, higher distress levels were felt by the trainee Dental Nurses. The trainee Dental Nurses in both curricula had a significantly better attitude towards their learning environment. The relationship between total distress and total attitude scores between the two curricula was statistically significant with similar findings reported within courses in the new curriculum. **Conclusion:** As distress increased, the students' attitude towards the learning environment decreased. These findings suggest that students in the new curriculum experienced more distress, and as distress increased, their perception of the learning became less positive. The low teacher-student ratio must be addressed and an effective student support service must be established to overcome the demands of the new curriculum. Minimising stress leads to a better perception towards the learning environment and may enhance the students' overall well being.

AN INVESTIGATIVE STUDY OF THE ACADEMIC PERFORMANCE OF SEMESTER II TRAINEE DENTAL SURGERY ASSISTANTS

*** SS Alhabshi**

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All trainees Dental Surgery Assistant (DSA) who sat the Semester II examination at Practical Training Centres (PTC) passed their practical component but they were failures in the theory components. **Objectives:** The aim of this study was to identify possible factors that might influence the performance of the trainees in the theory examination. The specific objectives were to determine whether: gender, age and ethnicity affects performance of the trainees; academic qualification affects performance; trainees' perception of the course affects performance, and to determine the various possible effects of facilities and condition of the PTC's on the trainees' performance. **Methods:** All the 119 Semester II trainee DSA'S were respondents of a questionnaire survey. **Results:** Female trainees, older age group trainees and those interested in the course and found the course interesting secured higher percentage passes in the theory examination. Candidates provided with accommodation, frequent group tutorials and time for self-study at PTCs performed better in the theory examination. Trainees who allocated time for self-study and did group self-studying at home also performed better in the theory examination. However, trainees perception of the course regarding "wanting a career change", and "having no other career choice" enabled obtaining a higher percentage pass in the theory component and those who felt that tutorial time at PTCs is sufficient, obtaining a lower percentage pass. **Conclusion:** Suggested remedial actions include providing accommodation, group tutorials and time for self-study at PTCs, promoting group self-study at home and allowing interested candidates with higher than necessary entry qualifications to qualify for selection.

AN INVESTIGATIVE STUDY OF THE ACADEMIC ACHIEVEMENT OF NURSING STUDENTS IN A DENTAL TRAINING INSTITUTE IN MALAYSIA

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Objectives: An investigative study was conducted to study various factors that may influence the academic achievement of Dental Nursing students. **Methods:** This project studied the performance of 122 Year II Semester III students in the theory component of their qualifying examination in November 2000. **Results:** There was no significant correlation between general factors (race, secondary school qualifications, and place of origin) and the examination performance. There was significant correlation between understanding and perceived difficulty of the examination questions and examination performance. There was also significant correlation between the interest of the students in various subjects and their academic achievement. There was no correlation between the studying methods employed by the students and their academic achievement. **Conclusion:** In this study, general factors such as race, secondary school qualifications and place of origin do not appear to influence academic achievement. However, factors that may contribute were found to be understanding and perceived difficulty of examination questions, together with student's interest in the various subjects.

LEVEL OF KNOWLEDGE, PERCEPTION AND PRACTICES IN RELATION TO ORAL HEALTH PROMOTION AMONG FINAL YEAR TRAINEE DENTAL NURSES

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Dental Nurses have an important role in oral health promotion. **Objective:** This study aims to examine the extent of knowledge, perception and practices of oral health promotion among the final year trainee Dental Nurses. **Methods:** A self-administered questionnaire consisting of five domains were distributed to 131 final year trainee Dental Nurses. Descriptive analysis was performed and the Chi-Square test was used to examine association between variables. **Results:** Majority of trainees have good and moderate knowledge of oral health promotion (21.4% and 45.8% respectively). About 64.0% perceived oral health promotion as moderately important and substantially high percentage have good perception of their role (90.8%). Getting canteen operators to sell healthy food was perceived to be the main practical constraint. However, teachers and school authorities were felt to be generally more cooperative compared to parents and children. Slightly more than half felt they have insufficient time to carry out other activities apart from achieving their work schedule. The main source of knowledge was reported to have been received during their course of training (79.4%). Although findings of this study suggest that level of knowledge, perception and perceived roles are associated with chair side practices of oral health promotion; this was found to be statistically insignificant. **Conclusion:** The trainee Dental Nurses have appropriate knowledge of oral health promotion, perceived oral health promotion to be moderately important and have a generally good perception of their role in promoting oral health. The findings also suggest that this group will carry out oral health promotion practices based on their assimilation of knowledge and good perception.

LEVELS OF MERCURY VAPOUR IN WORKING AREAS OF DENTAL NURSING STUDENTS AT CHILDREN'S DENTAL CENTRE & DENTAL TRAINING COLLEGE MALAYSIA

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Studies have shown that a small amount of mercury vapour is released from dental amalgam restorations during its placement and removals, during chewing and also tooth brushing. However, the exposure through dental amalgam is very minimal compared to exposure through diet, industrial and other natural sources. Studies also showed that the presence of amalgam restorations does not appear to affect the general health of patients. **Objectives:** The aim of this study was to assess the level of mercury vapour in the working areas of the Dental Nursing students at Children's Dental Centre & Dental Training College Malaysia, and to identify factors that contribute to the high level of mercury vapour. **Methods:** Three working areas with different characteristics and setting were selected. "Mercury Vapour Indicator" was used to record readings of mercury vapour level and specially designed formats were used to gather data for the study. **Results:** Exposure to mercury vapour is still below the recommended safety limit of $50. \mu\text{g}/\text{m}^3$. In the dental surgeries where the second-year Dental Nursing students carried out their clinical training of treating patients, the level of mercury vapour correlated to the number of amalgam restorations done. The highest level of mercury vapour was found to be in the preliminary Dental Operative Technique (OPTECH) laboratory where half the number of intake of first-year students *i.e.* approximately 63 students, performed simultaneously procedures of amalgam restorations. The highest average mercury vapour level was found to be $23. \mu\text{g}/\text{m}^3$, which was during the removal of amalgam restorations. The highest mercury vapour levels above the safety limit were recorded beside the amalgamator during the process of breaking the pre-capsulated alloy and also above the storage containers of waste amalgam upon opening the lid. The highest average mercury vapours level during breaking-off of the pre-capsulated alloy was $350. \mu\text{g}/\text{m}^3$ and during the opening of the waste amalgam container was found to be $83. \mu\text{g}/\text{m}^3$. **Conclusion:** High mercury vapour levels appear to be due to certain procedures involving amalgam, therefore increased mercury hygiene and regular control of working environments especially in the OPTECH laboratory should be implemented to minimise the exposure to the hazardous mercury vapour.

LONGITUDINAL MULTILEVEL ANALYSIS OF PERIODONTAL DATA ON MALE ROYAL AIR FORCE INTAKES

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Periodontal diseases are hierarchical in nature. However, diagnosis of the conditions is usually made at site level. Therefore, single-level analyses using sites as the computational unit is inappropriate as sites are dependent upon individuals. **Objective:** The aim of this study was to explore more robust statistical methods for analysing periodontal data and thus illustrate the power of multilevel modeling in determining predictors of periodontal diseases. **Methods:** Data were recorded from 100 males aged 16 - 20 years, involving loss of attachment, pocket depth, subgingival calculus, supragingival calculus, supragingival plaque, gingival bleeding and gingival colour. The data consisted of repeated measures on three occasions (level-one) at four sites (level-two) of each tooth (level-three), grouped by individuals (level-four). Multilevel models were developed using the statistical software "MLwin". **Results:** The most prominent predictor of loss of attachment and pocket depth was subgingival calculus. Supragingival calculus had a protective effect on both outcome measures whilst smoking and drinking were non-significant predictors. The number of sites per subject with gingival bleeding and supragingival plaque were strong predictors of pocket depth, with subgingival calculus more predictive for loss of attachment; whereas loss of attachment was greatest for sites with progressing pocket depth. **Conclusion:** Periodontal information was statistically efficient if acquired through one site per tooth (on several teeth) rather than several sites per tooth (on fewer teeth). The use of multilevel analysis showed that for periodontal variables examined, statistical power was not enhanced if information was acquired from multiple sites per tooth.

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PUBLIC'S PERCEPTION OF THE MOST IMPORTANT WAYS IN WHICH ORAL HEALTH AFFECTS THE QUALITY OF LIFE - FINDINGS FROM A NATIONAL SURVEY

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There is growing interest in how oral health affects the quality of life and this has led to a plethora of indices being developed to assess the impact of oral health on quality of life. Public and individual's perception are central to the concept of quality of life. However, existing indices have frequently failed to consider public's perception in their development. **Objective:** The aim of this study was to determine public's perception of the most important "ways" in which oral health affects the quality of life and to identify socio-demographic variations in perceived most important "ways". **Methods:** The vehicle for this study was the "Office for National Statistics Omnibus Survey of Great Britain". A random probability sample of 2,668 addresses was selected from the Postcode Address File. Interviews were undertaken with 1,865 (70%) adults (aged 16 years or older). **Results:** A range of most important "ways" in which oral health affects the quality of life were reported relating to physical, social and psychological ways. It was interesting to find that several "ways" ranked by respondents to be the most important to their quality of life are missing from existing indicators. Also gender, social class and age variations in perceived most important "ways" were identified. **Conclusion:** The findings of the above survey have significant implications for the design of future oral health-related quality of life indicators and raises concern about the content validity of existing measures. These findings may be considered for generating appropriate hypothesis to test the validity of existing measures.

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AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN REPORTED DENTAL ATTENDANCE PATTERNS AND PUBLICS' PERCEPTION OF HOW ORAL HEALTH AFFECTS THE QUALITY OF LIFE

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The relationship between dental attendance and the social and psychological dimensions of oral health (how oral health affects quality of life) has rarely been studied. **Objective:** The aim of this study was to determine the relationship between reported dental attendance patterns and public's perceptions of how oral health affects the quality of life (QoL). **Methods:** The vehicle for this study was the "Office for National Statistics Omnibus Survey of Great Britain". A random probability sample of 2,668 addresses was selected from the Postcode Address File. Interviews were undertaken with 1,865 (70%) adults (aged sixteen years or older). **Results:** Sixty one percent (61.0%, 1,136) of respondents reported to have attended the dentist within the last year. Fifty seven percent (57.0%, 1,065) reported that their oral health status enhanced their QoL and 48% (902) reported that it reduced their QoL. Those who reported attending the dentist within the past year were more likely to perceive that their oral health status enhanced their QoL ($p < 0.001$). Specifically, they reported more frequently that it enhanced their appearance ($p < 0.01$), their smiling/laughing ($p < 0.01$), their general well being/general health ($p < 0.01$) and their ability to work ($p < 0.05$) compared to irregular attendees. Using logistic regression analysis, when socio-demographic factors were taken into account as predictors of attendance, those who reported attending the dentist within the past year were 1.38 times (CI 1.12 - 1.71) more likely to report that their oral health status enhanced their quality of life. **Conclusion:** The findings may have implications for all involved in oral health promotion and evaluating oral healthcare.

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REASONS AND VARIATIONS IN RESTORATION REPLACEMENT AMONGST TRAINEE DENTAL NURSES

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Restorative treatment accounts for the major part of the economic resources spent on oral healthcare. The major workload in general practice is still the placement, replacement and re-replacement of restorations. Several reports of National Indicator Approach (NIA) on "Percentage of repeat fillings done on anterior and posterior permanent teeth" have indicated an achievement that was below the standards of 5% and 2% respectively. **Objectives:** The aim of this study was to investigate the reasons and variations in restoration replacement. **Methods:** The sample included all restorations replaced by second-year trainee Dental Nurses within one and a half month duration. Tutors/supervisors were standardised in the data entry. A study format was completed for every replacement restorations in the given time frame. Descriptive analysis was performed. **Results:** The main reason for replacement of all restorations was found to be fracture of the restoration rather than secondary caries. The second most cited reason was filling lost, the least being fractured tooth. Amalgam restorations were mainly replaced due to fracture of the material whilst glass ionomers and composites were replaced due to filling lost. Majority replacements were those in the lower posterior teeth. **Conclusion:** Restoration replacements mainly used the primary material without resulting in surface change. Restorations were mainly replaced in patients 10 years of age and below. Most restorations lasted less than two years with a median longevity of about 6 - 7 months. Failure of restorations was found to be mainly due to fracture of the material followed by filling lost which suggest lack of resistance and retention form. This could also be attributed to poor technique, improper handling of the material and lack of moisture control. Apart from placing emphasis on achieving a caries free cavity preparation, the technique and other related factors that contribute to the success of a restoration must also be given due consideration.

STUDENTS' PERCEPTION OF EDUCATIONAL ENVIRONMENT AT CHILDREN'S DENTAL CENTRE & DENTAL TRAINING COLLEGE MALAYSIA

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Objective: A qualitative cross-sectional study using the Dundee Ready Education Environment Measure (DREEM) was conducted to assess how the students at Children's Dental Centre & Dental Training College Malaysia perceive their educational environment. **Methods:** The DREEM instrument tool provided diagnostic information that could be used as a basis for modifying identified elements towards enhancing the students' educational environments and learning experiences. Differences in perceptions of the educational climate were explored and comparative analysis was on the basis of the following variables: type of course being studied (Dental Nursing and Dental Technology), year levels (first and second years) and between genders. **Results:** For the overall DREEM scores the Dental Technology cohorts rated their educational environment at 125/200 (62.5%) whilst the Dental Nursing cohorts rated theirs lower at 118/200 (59.0%). The first-year Dental Technology students rated their educational environment most highly (128/200 - 64.0%). The second-year Dental Technology students perceived their environment significantly higher than the second-year Dental Nursing students (61.5% versus 56.1%). The first-year Dental Nursing students rated their environment at 61.8% as compared to second-year students 56.1%. The first year male and female Dental Technology students reported similar perceptions. However, the second year male Dental Technology students scored 64.0% while the female students scored 60.0%. **Conclusion:** The educational environment perceived by both cohorts was deemed acceptable with an overall DREEM mean score of 122/200 (61.0%). It is recommended that these and other data from the study be used to design interventions to enhance the educational environment of this particular training institution, and possibly to compare students' perceptions in a range of dental institutions.

A SYSTEMATIC REVIEW OF THE LONGEVITY OF DENTAL RESTORATIONS

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Information on the longevity of restorations is essential in dental practice. The escalating cost of healthcare demands provision of services that have evidence of effectiveness. **Objective:** The objective of this study was to conduct a systematic review of the longevity of routine dental restorations in permanent posterior teeth by examining research reports of "adequate" quality, and to identify factors influencing its variability. **Methods:** An advisory group was recruited, and national guidelines for systematic reviews were followed. Simple Class I and Class II amalgam, composite resin, glass ionomer and cast gold restorations were covered. A comprehensive search of electronic databases, reference reading, "grey literatures" and hand-searching revealed 124 research reports. The relevant reports were assessed for validity and quality according to agreed criteria. The analysis was descriptive. **Results:** Eight of 58 relevant research reports were categorized according to satisfactory validity rates as the main outcome measures of longevity of restorations. They suggested that 50% of all restorations last 10 - 20 years. The findings were supported by the totality of studies reviewed. However, variability was substantial, and factors such as restoration type, materials, the patient, the operator, the practice environment and type of care system appeared to influence longevity. **Conclusion:** Many studies were inadequate in design. It is recommended that the quality of future investigations needs to be improved particularly in relation to study design apart from the maintaining of a rigorous scientific approach to the research.

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Microbial Contamination of Equipment in the Dental Laboratory

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Objectives: To determine the extent of microbial contamination on the high touch areas of equipment in the dental laboratory. **Materials and Method:** A dental laboratory based study was carried out on four selected high touch areas, which were the vibrator (power switch), the cast trimmer (power switch) and the denture polisher (power switch & speed control knob). Sterile cotton swabs were used to swab these four areas smeared onto nutrient agar media and then incubated for 72 hours. The colony forming units (CFU) were counted after 72 hours to determine the extent of microbial contamination. Sample collection was carried out for 3 consecutive days. As a control, the same areas were disinfected and samples were taken exactly as before. Investigation of similar procedure was carried out for another week. A total of 48 sample plates were collected, 24 before disinfection and another 24 after disinfection. **Results:** A before and after comparison of mean CFU count in the four high touch areas; showed that the denture polishing machine; both speed control knob (216/54.33) & power switch (189.67/9.83) had the highest CFU count, followed by the cast trimmer (68.17/18) and finally the vibrator (50/7). Before disinfection, the bacteria count in 24 plates; minimum, maximum, mean \pm (SD) were 19, 410 and $131.08 \pm (105.768)$ respectively. The bacteria count in 24 plates after disinfection; minimum, maximum, mean \pm (SD) were 1,102, $21.96 \pm (28.303)$ respectively. Reduction in mean of CFU count after surface disinfection was statistically significant ($p < 0.05$). **Conclusion:** The results showed high levels of bacterial contamination of the high touch areas in the absence of surface disinfection. Therefore, it is highly recommended that disinfection procedures should be implemented in the dental laboratory as is conducted in the dental clinic.

Neutral Zone and Polished Surface Technique for Mandibular Resorbed Residual Ridge

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Objective: Edentulous patient with lower resorbed residual ridge pose a great challenge to the clinician in providing them a well retained and stable denture. This is due to lack of ideal ridge height and conformation which compromise the denture stability. For such cases, the denture is indicated to be fabricated using the concept-of neutral zone and polished surface. Neutral zone is a potential zone within the oral cavity where forces directed outward by the tongue is neutralized by inwardly acting forces of the oral musculature. It will serve as guide in setting up the artificial teeth. Polished surface of a particular patient on the other hand was recorded so as to provide room for the oral and perioral musculature to seat. Otherwise those muscles action will unfavorably unseat the denture. In the other words, we are manipulating or taking advantage of the muscles action as means to stabilize lower dentures in cases of severely resorbed lower residual ridge. **Materials and Method:** 3 edentulous patients visiting the Kulliyah of Dentistry IIUM will be included in the study. This is a longitudinal qualitative study. The criterion for selection is severely resorbed lower ridge. Two set of dentures will constructed for them, a conventional and a neutral zone with polished surface concept. No facebow transfer made and the patients were followed up for 3 months. Each patient was appointed for in depth interview. The data collected was analyzed using SPSS software. **Results:** The obtained results showed that two of those three patients preferred the test denture made by neutral zone method rather than conventional one. A patient however could not appreciate the test denture because the upper arch teeth setting, as in accordance to the neutral zone of the lower ridge, invaded the patient's tongue space, rendering the denture uncomfortable to be worn. A P-value of < 0.05 was considered for statistical significance. With P-value > 0.05, the finding is therefore insignificant. **Conclusion:** It was concluded that combination of neutral zone and polished surface techniques do not contribute much in enhancing the stability and retention of lower denture in patients with severe mandibular residual ridge resorption.

Saliva pH Changes in Patients with High and Low Caries Risk after Consuming Organic (Sucrose) and Non Organic (Maltitol) Sugar

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Objective: This study attempted to compare the changing pattern of saliva pH after consuming different types of sweeteners (sucrose and maltitol). **Materials and Method:** A cross-sectional comparative study was conducted among 14 male patients (7 high caries patients, DMFT ≥ 6 ; 7 low caries patients, DMFT ≤ 3) attending IIUM dental clinic with initial saliva pH interval 6.0 to 7.5. Snacks containing 8gm sucrose and 8gm maltitol were used as sweeteners and changing pH value of saliva were measured 7 times serially by “Waterproof pH Test 10BNC” at 0 (before snack consumption) and at 5, 10, 15, 20, 30 and 60 minutes after snack consumption. Significant changes between the variables analyzed by independent pair “t” test. **Result:** There were no significant differences ($p > 0.05$) in saliva pH changes between low risk group and high-risk group after consuming sucrose and maltitol except pH changes measured at 10 minutes after consuming sucrose. The mean pH value for low risk group after consuming sucrose at 0, 5, 10, 15, 20, 30 and 60 minutes are (6.48, 6.96, 6.65, 6.42, 6.28, 6.55, 6.69) and those of maltitol were (5.99, 6.42, 6.14, 5.82, 5.90, 6.41, 6.42). The mean pH value for high risk group after consuming sucrose were (5.97, 6.62, 6.22, 5.94, 5.99, 6.14, 6.26) and that of maltitol were (6.01, 6.46, 6.28, 6.25, 6.04, 6.16, 6.24). **Conclusion:** The changing pattern of saliva pH in high risk patients were lower than those of low risk patients, but these differences were not significant (> 0.05). Small sample size and biological influence on saliva quality may contribute to this.

Reproducibility of Obtaining Occlusal Vertical Dimension of Complete Denture among Different Operators

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Objective: To verify the reproducibility of obtaining occlusal vertical dimension of complete denture among different operators with different academic backgrounds and experiences.

Materials and Method: Monomer and polymer, alginate, plaster of Paris, cold mould seal.

Instruments: Master cast model, base plate, bite rim (ready-made), torch, scraper, wax knife, indelible pen, calliper and Fox bite. **Methodology:** A pilot study was carried out to compare the Reproducibility of Obtaining Complete Denture Vertical Dimension between two kind /types operators; students and training lecturer. A questionnaire with OVD measurement format was used to collect background demo-academic data and measurement of OVD of participants of the study. Three edentulous patients were selected as subjects to do OVD measurement by 6 different operators who are 3 students, 3 trainee lecturers. One prosthodontic specialist also measured the OVD of these 3 patients to get the gold standard for computing the reproducibility of OVD measurement of the participants. Measurement System Analysis (MSA) was used to compute reproducibility of OVD measurement of participants based on gold standard measurement. **Results:** Out of 2 perfect reproducibility of OVD measurement, 50% (1/2) was done by student and 50% (1/2) was done by training lecturer; out of 9 excellent reproducibility of OVD measurement, 44.4% (4/9) were done by student while as 55.6% (5/9) were done by training lecturer; Out of 7 moderate reproducibility of OVD measurement, 57% (4/7) were done by students while as 43% (3/7) were done by training lecturers. **Conclusion:** There was no significant difference of reproducibility of OVD measurement ($p>0.05$).

Prevalence of Developmental Dental Defect among Patients Attending International Islamic University Malaysia Dental Clinic

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Objective: The aim of this study was to explore the developmental dental defect in Malaysian patients in general and particularly among those who were attending at IIUM dental clinic.

Materials and Method: A cross-sectional descriptive and analytical study was carried with face-face interview, clinical examination and panoramic radiographic examination by Planmeca digital x-ray with Romexis software among 100 patients attending IIUM dental clinic. All types of dental anomalies regarding number, size, shape and structure were recorded and analyzed by different races (Malay, Chinese, and Indian) of Malaysian by chi square test. **Result:** The most common types of dental anomalies encountered were cusp of carebelli (55%), dilacerations (54%), microdontia (38%) and hypercementosis (38%). There were no significant differences, ($p > 0.05$) regarding the types of developmental dental defect among different Malaysian races. Other uncommon types of dental anomalies found in the study were dens evaginatus (24%), ectopic enamel (20%), discoloration (20%), hypodontia (19%), supernumerary roots (13%), hyperdontia (11%), taurodontism(11%), macrodontia (7%), cocresence (2%), fusion (1%) and dens invaginatus (1%). There were also no significant differences ($p > 0.05$) regarding the uncommon types of dental defects among races in Malaysia. **Conclusion:** Cusp of carabelli, dilaceration, microdontia and hypercementosis were the major common dental anomalies in comparison to other type of anomalies. We cannot conclude the result to represent actual population due to small sample size. A community survey should be done to get more accurate data.

The Clinical Effect of Different Self-Performed Plaque Control Modalities on the Gingival Inflammation among a Sample of Malaysian Adults

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Objectives: the aim of this study was to investigate the efficacy of different approach of self-performed plaque removal (mechanical Vs chemical) on the periodontal health status among a sample of Malaysian adults. **Materials and Method:** Thirty seven systemically healthy patients, 20-30 years old and with gingivitis, were recruited for the study. They were randomized into three different groups according to the self-performed plaque control practice (group 1, group 2, and group 3). All subjects received supra and subgingival scaling, and detailed oral self-care demonstration according to mode of oral self-care for each group. The periodontal parameters gingival index GI, plaque index PI, and bleeding on probing (BOP) were evaluated at baseline and after two months. **Results:** The results showed improvements for all periodontal clinical parameters for subjects in group 2 and 3, and significant reduction ($p < 0.05$) of BOP levels for subjects in group 3 with chemical and mechanical plaque control compared to group 1 with manual tooth brushing only. **Conclusion:** Dental health professionals should emphasize on the improvement of quality of self-performed mechanical plaque removal and use of adjunct chemical plaque control mouthwashes.

Antimicrobial Effect of Black Seed Extract (*Nigella Sativa*) in Comparison to Formocresol on *Staphylococcus Aureus*

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Objectives: The objectives of the study were to compare the antimicrobial effect of black seed extract (*Nigella sativa*) in comparison to formocresol, a commonly used temporary intracanal medicament during endodontic therapy, on *Staphylococcus aureus* in vitro. **Materials and Method:** Various concentrations of black seed extract and formocresol prepared with growth medium were inoculated with *Staphylococcus aureus*. These were incubated at 37°C and the turbidity was determined by optical density (OD) using a spectrophotometer at 600 nm wavelength, measured at specific intervals over a period of 24 hours. **Results:** The black seed extract at a concentration of 2% (p=0.05), 3% (p=0.03) and 5% (p=0.05) has an antibacterial effect which is comparable to those exhibited by formocresol at the same concentration which are 2% (p=0.04), 3% (p=0.06), and 5% (p=0.01). **Conclusions:** The black seed extract inhibits *Staphylococcus aureus* growth in vitro and its potential for future use as antibacterial medicament in endodontic therapy can be considered.

Determination of the Level of Mental Foramina in Malaysian Malays and Chinese Using Panoramic Radiograph

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Objective: To determine the level of mental foramina (MF) in Malaysian populations (Malays and Chinese) compared with standard anatomical level. **Materials and Method:** A cross-sectional descriptive and analytical study was carried out at radiology department, Kulliyah of Dentistry, IIUM. Orthopantomographic (OPG) radiograph results of 60 Malaysian subjects were scrutinized to assess MF regarding the numbers, symmetric of left and right, position and shape of MF in term of different races, ages and gender. Horizontal position of MF was measured relative to the long axis of lower teeth. On the other hand, the vertical position of MF was measured from the center of MF to the alveolar bone crest (MF-ABC) in dentulous and in edentulous patients from the center of MF to the superior border of the mandible (MF-SB) and inferior border of the mandible (MF-IB) in both patients. The measurement was conducted using Planmeca Romexis software. χ^2 test was used. **Results:** In vertical position of MF, for dentulous patients, mean(\pm SD) of distance of MF-ABC in Malay and Chinese were (15.2(\pm 2.9)mm and 16.4(\pm 2.2)mm) respectively in right side and (15.0(\pm 2.7) mm and 16.9(\pm 1.9)mm) respectively in left side. On the other hand, for edentulous patients, mean (\pm SD) of distance of MF-SB in Malay and Chinese patients were (9.4 (\pm 5.7)mm and 7.8(\pm 5.4)mm) respectively in right side and (8.9(\pm 5.6)mm and 6.9(\pm 6.0)mm) respectively in left side. **Conclusion:** The study indicated that the level of mental foramina (MF) in Malaysian populations compared with standard anatomical level was varied. A further study should be carried out by using more precise equipment to measure the data like Computed Tomography (CT) scan that produce more details than OPG radiograph.

The Effect of Flax Seed on Candidal Growth in Vitro (Comparative Study)

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Objectives: Flaxseed is a natural product that has been given more and more attention these days because of its beneficial health effect. There are a lot of active component in the flaxseed that is proven to improve person health; one of them are lignan. Lignans, a class of highly researched phytochemicals that have found to have antifungal, anticancer, antibacterial and antiviral properties. Thus, the extraction of this compound from plant material has become an important industrial process. The aim of this research is to investigate antifungal ability of different types of flax seed extract invetro, and to compare their potency. **Materials and Method:** Oil-based extract and water-based extract of flaxseed were used in this study in volume (5i.il, 10i.il and 15i.i) .Disc diffusion method was performed in triplicate and the zones of inhibition around the disc within each petri dish were measured after 48 hours of incubation period. The results were recorded and evaluated. This experiment was repeated with different volume in comparism to Nystatin(100 units) as a positive control. **Results and Conclusion:** The result shows that the oil-based extract shows no antifungal activity regardless of the quantity used. But, water-based flaxseed extract shows a positive result, compares' to Nystatin. The higher the quantity of water-based flaxseed extract used, the bigger the zone of inhibition recorded. From these results we suggest that water-based flaxseed extract possesses a significant antifungal activity compared to oil –based extract. Thus, water-based flaxseed extract might be promising if used as a mouth wash to reduce fungal infection in oral cavity and the incidence of side effect that may occur with some synthetic product

Comparison between Clinical and Radiographical Study of Proximal Dental Caries among Adult Patients Attending IIUM Dental Clinic, Kuantan, Pahang

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Objective: The aim of this research is to compare the clinical and radiographical findings of proximal dental caries among adult patients attending IIUM Dental Clinic. **Materials and Method:** The method was prospective cross sectional study that was conducted on 69 adult patients attending IIUM Dental Clinic. For each patient, clinical charting was done first without using radiograph by using double blind technique. After that bitewing radiograph were taken. The radiograph was viewed from the computer and was assessed for any radiolucency below the contact point either at mesial or distal part of the tooth. When there was radiolucency present in the radiograph, the data were recorded even clinically cannot be seen. **Results:** Results revealed that from 69 patients, 171 teeth were detected with proximal dental caries. Out of 171 teeth with proximal dental caries, 133 teeth were detected by both clinically and radiographically, 36 teeth were detected by radiographically only and 2 teeth were detected by clinically only. **Conclusion:** In conclusion, there is significant difference between clinical and radiographical examination of proximal dental caries ($p < 0.05$)

Radiographic Study on Premature Loss of Primary First Molars Leading to Premature Eruption of First Permanent Premolars

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Objectives: Purpose of this study was to investigate radiographically the premature loss of primary first molars and thus consequence with the premature eruption of first permanent premolars amongst the paediatric patients. **Materials and Method:** A retrospective study on total 178 Orthopantomograms (OPGs) of 6-9 year-old paediatric patients who attended to Students' polyclinic, Kulliyah of Dentistry, International Islamic University, Malaysia (Kuantan Campus) from January 2009 – April 2010. OPGs with missing and/or early eruption of premolar were scrutinized to find out their relationship. X^2 test and correlation "r" were used as significant tests for the study. **Results:** Out of 178 OPG, total 47 molar losses were observed in 32 OPG; total 21 premolar eruptions were also detected in 32 OPG. Prevalence of early loss of molar in the study was 29 early molar loss/ 1000 molar/ year. Prevalence of early eruption of premolar was 13 premolar/1000/ premolar/year. In the study ratio of early eruption of premolar and early loss of molar was 1: 2.4; one premolar eruption was found out after 2.4 molar losses. There were no significant ($p > 0.05$) between premature loss of primary first molars and the premature eruption of first permanent premolars, but some correlation ($r=0.3$) between number loss of molars and early eruption of premolars were observed. **Conclusion:** Orthopantomogram radiograph are important diagnostic resources in developing dentition. It can be concluded that premature loss of primary first molars may lead to premature eruption of first permanent premolars.

Oral Hygiene Practice: The Effectiveness of Tooth Brushing Among IIUM Kuantan Campus Undergraduate Students 2010/2011

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Objective: To assess the effectiveness of tooth brushing on the removal of plaque among the undergraduate students of IIUM Kuantan Campus. **Materials and Method:** 57 IIUM Kuantan students were selected from 400 questionnaires that were distributed based on the inclusive and exclusive criteria. Each student was instructed to bring their own toothbrush and toothpaste is provided. Disclosing tablet was given to measure the plaque score before and after toothbrushing. The Plaque scoring system used was O'Leary Plaque Index. **Results:** The students selected were from each Kulliyah in IIUM Kuantan Campus, excluding Kulliyah of Dentistry. The ratio of female to male students were 6:5. The minimum and maximum of students are 19 and 26 years old respectively. Based on the plaque score before tooth brushing; minimum, maximum, mean and standard deviation values are 33.3%, 94.6%, 70.4% and ± 15.85 respectively. The plaque score after tooth brushing; minimum, maximum, mean and standard deviation values are 3.6%, 70.8%, 34.3% and ± 16.04 respectively. The result of t-test using paired-samples between plaque score before and after toothbrushing; t-value is 17.0 and p-value is 0.00. **Conclusion:** The result of this study shows that there is significant reduction in plaque score before and after tooth brushing which shows that students of IIUM Kuantan Campus are able to remove plaque effectively by means of toothbrushing.

Evaluation of Physical Properties and Cytotoxicity of Gypsum-Based Biomaterials on L929 Fibroblast Cells

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Objectives: Pure gypsum is a promising biomaterial due to its osteoconductive, biodegradable, and biocompatible properties. Polyacrylic acid (PA) exhibiting the property of adhesion and are used in glass ionomer cement (GIC). The aim of this preliminary study was to evaluate physical and cytotoxic properties of pure gypsum, gypsum-based PA-biomaterials, calcium hydroxide and glass ionomer cement for application as liner/ base materials in dentistry. **Materials and Method:** Pure alpha-hemihydrate gypsum (P-Gyp), gypsum-based materials with PA (Gyp-PA), Dycal (calcium-hydroxide (CH)) and GIC were used to evaluate setting time, solubility (%) in distilled water and cytotoxic effect. For cytotoxicity test disc shaped samples were transferred into a culture medium for 24 hours. Eluates of different concentrations were obtained and pipetted onto L-929 mouse fibroblast cultures and incubated for 3 days. Cellular viability was assessed using MTT assay after the incubation period. The degree of cytotoxicity of each sample was determined according to the reference value represented by the cells with a control. Statistical significance was determined by one-way ANOVA followed by post-hoc test ($p < 0.05$) for setting time, solubility (%) and cell viability among the 4 groups of materials. **Results:** Setting time was significantly higher for P-Gyp and Gyp-PA group of materials; solubility test showed a similar tendency (P-Gyp > Gyp-PA > CH > GIC). P-Gyp was found as the least cytotoxic among the groups of materials at different concentrations. At 100 mg/ml dilutions of materials in growth medium highest cytotoxicity was observed with CH group. **Conclusion:** Cytotoxic effect was not observed with P-Gyp and higher solubility of this material might be beneficiary as the material is biodegradable; therefore, application of this novel biomaterial on deeper dentin and possibility of gradual replacement of this biodegradable material by tertiary dentin would be highly promising.

Radiographic Study of Bone Lesions in Patients at the Kulliyah of Dentistry, International Islamic University Malaysia

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Objectives: This research was done to study the bone lesion of jaw amongst the patients attending at the student's polyclinic through Orthopantomograph (OPG) images. **Materials and Method:** The OPG images taken by using the PlanmecaPromax 3D (SN: TPX355234) and the PlanmecaRomexis 2.1.1.R version of digital x-ray viewing software. The first step was collecting all the OPG images from 1st April 2009 until 31st January 2011. Initially, the radiographs were grouped into normal and abnormal. Then, the abnormal radiographs being further classified into 3 major groups which were radiolucent, radiopaque and mixed. This classifications include site, size, border, and possible diagnosis as part of the lesion's appearance. Out of 1405 OPG images collected, 1232 were normal, 77 were abnormal and 96 images were discarded because of containing artifact. Then, the data collected had been analyzed statistically by using SPSS Version 16.0. **Results:** Among 77 abnormal radiograph images, 41 images were radiopaque, 30 images were radiolucent and 6 images were mixed between radiopaque and radiolucent. Out of 77 abnormal images, 34 images that showing bone lesion were taken from male patients while the rest which was 43 images came from female patients. The most abnormal OPGs were taken from Malay patients (67 images), followed by from Chinese patients (9 images) and Indian patient affected the less (only one image). There are 5 top common lesions seen were Periapical Granuloma or Cyst (28), Condensing Osteitis (25), Retained Root (5), Odontoma (3) and Cement-osseous Dysplasia (3) respectively. **Conclusion:** Overall, the jaw bone lesions in the patient that coming to the Kulliyah of Dentistry was still small in number in comparison with soft tissue lesion or odontogenic infected lesion.

The Study of 4th Year IIUM Dental Students' Capability to Identify Bite Mark

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Objective: To assess capability of the 4th year dental students on identification of a bite as an example of an apple bite mark. **Materials and method:** A cross-sectional descriptive and analytical study was carried among 21 dental students from Kulliyah of Dentistry, IIUM who participate voluntarily. One student has to bite apple and a cast of bite mark was made. The other 20 students have to identify the correct one which was mixed with other 6 casts which have existed in Orthodontic department. Reading of correct cast and time taken by students were recorded. **Results:** 12 out of 20 students (60%) chose the correct cast of apple bite made by one student. Minimum, maximum and mean \pm SD time to choose the correct one were 27 seconds, 5 minutes 32 seconds and 2minutes 22 seconds and \pm 74.741 respectively. There was no significant association ($p>0.05$) between choosing correct cast of apple bite and learning hours of Forensic Odontology and time taken to choose correct one. In the study, minimum, maximum, mean and \pm SD of learning on Forensic Odontology were 2 hours, 5 hours, 2.35, \pm 0.933 hours respectively. Almost all of the students, 19 out of 20 students attended the Forensic Odontology lecture. **Conclusion:** Students are interested in Forensic Odontology and need practical training to improve capability of students regarding identification of bite mark.

The Impact of Using Modified Impression Techniques on the Quality of Complete Dentures (One Year Clinical Study)

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Objectives: The aim of the study was to compare the patient's satisfaction and quality of complete denture made by modified and conventional impression techniques. **Materials and Method:** 25 completely edentulous patients ranging from moderate to severe flat residual ridge and flabby tissues were chosen from outpatient dental clinic, KOD, IIUM. Each patient was served with two sets of complete dentures. The first set was the conventional complete denture (control) constructed according to the conventional way whereas the second set (test) was constructed by using special modified techniques. All the patients were given one of the sets without mentioning the type of the set. After continuous use for one month, the patients were offered the second set. The dentures were assessed clinically by using an index by Hoad-Reddick and Grant (1988). Patients' satisfactions on both dentures were assessed by pre-set guided questions including open-ended questions. **Results:** All the patients have complained in the conventional denture whereas only two patients have complained in the modified dentures in term of discomfort, redness and ulceration. The frequency of recall appointments were more in conventional dentures compared to the modified dentures. Moreover, stability and retention were higher with the modified dentures compared to the conventional ones and patients exhibited faster adaptation to the modified dentures. 80% of the patients have exhibited no clinical ulcerations, redness, and sore spots in modified dentures. 10% with flabby ridge showed sore spots and redness. There was no difficulty with phonetics with the modified dentures. Neuro-muscular control was observed to be easier with the modified dentures wearers. The obtained results showed significant difference between to test group of dentures and the control group of dentures. **Conclusions:** Modified denture which was constructed using special modified techniques showed better quality results of denture compared to conventional ones.

A Study on Effect of Schooling Status and Oral Hygiene Education on Early Childhood Caries of the Paediatric Patients Attending Students' Polyclinic, Kulliyah of Dentistry, IIUM Kuantan

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Objective: To compare decayed and filled (df) index and severity of early childhood caries (ECC) between children who are attending preschool and are not attending preschool. **Materials and Method:** A cross-sectional comparative study was conducted amongst 50 paediatric patients aged from 2- to 6-years old. Their caries statuses were evaluated using World Health Organization (WHO) diagnostic criteria for decayed and filled teeth. A semi-structured questionnaire was used to collect data by interviewing the caregivers. Analysis was done using SPSS version 16.0. X^2 and independent pair "t" test were used. **Results:** In the study, 80% (40) of the children attend preschool. Among them, only 28 children obtained Oral Hygiene Education (OHE) at school. Minimum, maximum and mean \pm (SD) of df values of the children were 0, 20 and $10.58 \pm (5.1)$ respectively. Only 2 children (4%) were caries free (df =0) ; 6 children (12%) were moderate-ECC (df \leq 5) ; 42 children (84%) were severe-ECC (df > 5). This study proved the disease pattern; most of the caries are in maxillary central incisors and mandibular first primary molar. There were no significant association ($p > 0.05$) between severity of ECC with schooling status including age, gender, types and frequency of receiving OHE. **Conclusion:** No significant association between schooling status, types and frequency receiving OHE and occurrence of severity of ECC. Other factors may influence the occurrence of caries in children rather than schooling status and effectiveness of OHE. Caries status was distant from the WHO oral health target of 50% caries free in this age range

The Study of Bacterial Aerosol Spread between Different Dental Procedures Conducted at the IIUM Outpatient Dental Clinic

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Objectives: The objective of the study was to assess and compare the amount of aerosol contamination produced during scaling (periodontic) and impression taking (prosthodontic) procedures. **Materials and Method:** The study was done in a treatment room of IIUM outpatient dental clinic. Total of 5 patients were underwent for scaling and impression taking procedures. During both procedures, four agar plates were placed on different positions surround the working dental chair. The positions were on bracket table, computer table, working nursing table, and crashcart. The agar plate was exposed during the first 30-minutes of each procedure. The plates then were closed, labeled and taken to the microbiology laboratory. The Colony-Forming-Unit (CFU) was counted after 24 hour incubation period. **Results:** There were no statistically significant differences in the count of colony forming unit of the bacteria in the culture plate between scaling (periodontic) and impression taking (prosthodontic) procedures ($p=0.535$). **Conclusions:** Microbial aerosols formed during scaling and impression was not comparably difference.

Comparison of Tooth Size between Malay Dental Students of IIUM and the Western Norms

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Objectives: The aim of this study was to compare the mean tooth sizes of Malay dental students of IIUM with those of the Western people. **Materials and Method:** This was a comparative descriptive study to measure the tooth size of the Malay race and compare it with that of the Western norms. For the study, 57 Malay dental students were selected by purposive and convenient sampling method from a total of 187 students who were studying in the Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Pahang in 2011. Upper and lower impressions of these students were taken using alginate impression material in the students' Polyclinic. The impressions were then cast with stone to produce a study model. The study model was used to take measurements of the teeth in this study. The measurement apparatus used was a standardized electronic caliper. The caliper was put on the contact points on the mesial and distal sides of the tooth for greatest diameter measurement (in mm). All measurements were recorded in a format and the minimum, maximum, mean, standard deviation (SD) and range values were computed by SPSS version 16.0 to compare with the mean size of Western norms, which were taken from Wheeler's Dental Anatomy, Physiology and Occlusion by Ash and Nelson. **Results:** In the study, the differences (mean) between tooth sizes of Western Norms and the 57 Malay students in the first quadrant 1 (Q1) of the central incisor (CI), lateral incisor (LI), canine (C), first premolar (FP), second premolar (SP), first molar (FM) and second molar (SM) were 0.2, 0.2, 0.2, 0.1, 0.2, 0 and 0.5 respectively; those of the second quadrant (Q2) were 0.1, 0.2, 0.2, 0.1, 0.3, 0.1 and 0.5 respectively; those of the third quadrant (Q3) were 0.3, 0.5, 0.2, 0.2, 0.2, 0.1 and 0.9 respectively; and those of the fourth quadrant (Q4) were 0.2, 0.3, 0.2, 0.1, 0.1, 0.1 and 0.6 respectively. **Conclusion:** Minimum, maximum and mean differences between Western values and 57 Malay students of all teeth were 0 mm, 0.9 mm and 0.24 mm respectively. This indicated that there was not too much variation between Western tooth size and those of Malay students. There was a limitation to compute paired "t" and significant "p" value by comparing the mean value of Western norms and Malay students' tooth size because there was only the mean value of Western norms available and not the individual values of Western tooth size data.

Cigarette Smoking and Dental Status among Students in IIUM Kuantan

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Objective: Smoking is a risk factor for periodontal disease and caries. The aim of this study is to ascertain the effect of smoking on periodontal diseases and dental caries among the participants of IIUM Kuantan. **Materials and Method:** The study population will be all students studying in IIUM Kuantan campus. Subjects will be selected from each Kulliyah by quota sampling method (non-random) based on inclusion and exclusion criteria. The subject gathering is by sending 50 questionnaires to each 7 Kulliyah through their student's society. Selected subjects according with inclusion and exclusion criteria will be examined. Examination is by dental mirror and dental explorer to measure Decay Missing Filling Total (DMFT) index and Community Periodontal Index (CPI) probe to measure CPI score on dental unit under adequate light. The results were analyzed by using SPSS version 16. **Results:** According to our study, smoking amount and duration has little effect to periodontal health and dental caries with mean age 23.12, decay 2.88, missing 0.12, filling 1.38, amount of smoking 13.5, duration of smoking 6.94. **Conclusion:** In conclusion, smoking does not affect periodontal health and dental caries

Screening for Undiagnosed Diabetes Mellitus among the Patients in Kulliyah of Dentistry IIUM

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²Lecturer, Kulliyah of Dentistry, International Islamic University Malaysia

Objective : To diagnose diabetes mellitus among the patients in dental clinic , Kulliyah of Dentistry(KOD), International Islamic University Malaysia and to determine the association between the diabetes mellitus and the dental diseases. **Materials and Method:** This is a cross-sectional descriptive and analytical study. Total 100 dental patients were studied for determination of random blood glucose level by using capillary blood glucometer (Accu – Check Performa). Study period was March to December 2011. Pre – tested semi- structured questionnaire were distributed before performing the tests and data were collected and analysed by using SPSS software $|\chi^2|$ test. **Results:** Out of total 100 patients, 2 % were found to have increased random blood sugar level more than 11.1 mmol/L. Out of these two patients, one had periodontal disease and the other had dental caries. These patients have undertaken the treatment of diabetes mellitus after confirming the venous plasma glucose levels. Data was statistically analysed and showed no association between diabetes mellitus and dental diseases. ($P>0.05$). **Conclusion:** In our study, only 2 out of 100 cases were determined as diabetes mellitus although there is no association between diabetes mellitus and dental diseases. It is probably due to small sample size of our study. To be more informative large numbers of cases are necessary for showing statistically significant result of the study. Two patients who having increased random blood sugar level were unaware of their diabetic status at the time of visit to the dental clinic. Thus, we suggest to do blood glucose determination as a routine screening for early diagnosis of diabetes mellitus in patients presenting with dental diseases in dental clinic.

Gingival Health Status among a Sample of Malaysian Patients Attending the Periodontic Clinic IIUM

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Objectives: This study investigated the severity of gingivitis and plaque in a representative sample of Malaysian patients attending the periodontics clinic in international Islamic university Malaysia. **Materials and Method:** A total of sixty subjects of age 20-35 years old were evaluated for the severity of gingivitis and the presence of plaque using Gingival Index (GI) Loe and Silness 1963, and Plaque Index (PI) Silness and Loe 1964, respectively. Detailed medical, dental history and demographic data were collected in a questionnaire form. **Results:** 75% patients are diagnosed with moderate gingivitis; remaining 25% are diagnosed with mild gingivitis. 29% of study sample used interdental aids (dental floss) once at night and 39% used mouthwash only one time/day. The gingival and plaque indices in males were significantly higher than in females ($p < 0.05$). **Conclusion:** There is an increase in the percentage of severity of gingival index and presence of plaque in the representative sample, indicating the need for restricted oral hygiene instructions, awareness program, and regular professional plaque removal to improve the oral health condition.

**A Comparative Study on Teaching Anatomy
of the Head and Neck Region to Dental Students IIUM
Using Cadavers, as Compared to Using Simulated Plastic Models**

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Objectives: This study aimed at exploring and comparing the students' preference on teaching aids in learning gross anatomy of head and neck region and reasons for their preferences. It is also to investigate which teaching aid helps the students in better understanding of human gross anatomy. **Materials and Method:** A cross-sectional comparative study was carried out with a total of 156 students from Faculty of Dentistry by using a pretested, semi structured, self administrated questionnaires including open-ended questions. Significant differences of the preference on teaching aids in gross anatomy were analyzed by using X^2 test. **Results:** The number of students who preferred for plastic models is considerably higher than that of cadaver possibly due to the condition of cadavers and also easy access to plastic models. There are significant results showing plastic models are the aid of choice in terms of hand ability, observation and understanding, knowledge gain and also application. However, there is no statistically significant difference in the general preferences of the students in studying gross anatomy of head and neck region using cadavers and simulated plastic models with p value of 0.06. **Conclusions:** Preference of students depends on the quality of the teaching aids and also their availability to the faculty. Cadaver still has its role in terms of the knowledge gained and its application in OSPE session. It is also suggested that cadaver is useful mainly for the reason of application in clinical practice while the plastic model should be used for studying, memorizing and also understanding.

PERCEPTIONS OF STAKEHOLDERS TOWARD PERFORMANCES OF THE GRADUATES OF CHILDREN'S DENTAL CENTRE & DENTAL TRAINING COLLEGE MALAYSIA IN DELIVERING ORAL HEALTH SERVICES

*M Kasiappen, *AMA Bakar, *NR Saad, *AT Zamzuri

* Children's Dental Centre & Dental Training College Malaysia

The Children's Dental Centre & Dental Training College Malaysia trains all the three categories of dental allied health personnel namely the Dental Nurses, Dental Technologists and Dental Surgery Assistants for the Ministry of Health, Malaysia and other government agencies such as the Armed Forces and public universities. **Objectives:** The aims of this study were to identify the satisfaction level of stakeholders toward the knowledge, skills and attitude/discipline of the graduates at work. It was also conducted to compare the performances of Dental Nurses, Dental Technologists and Dental Surgery Assistants in delivering oral healthcare. **Methods:** A self-administered questionnaire consisting of three main domains were e-mailed through MOHCube to all the 90 District Dental Officers in Malaysia. Stakeholders from the Armed Forces and universities were excluded from this study. The items in the questionnaire sought to assess the graduate's understanding in their roles and functions, knowledge, skills, attitude and discipline as an oral healthcare worker. Data were analysed descriptively using SPSS Version 12.0. **Results:** The response rate was 89.0%. Dental Nurses scored the highest satisfaction level (100%) for neatness of dressing, for being considerate, having good communication skills and also being confident in carrying out their duties. However, their ability in problems solving scored the lowest (93.8%). Whereas for Dental Technologists, the highest score (100%) was only for being tolerance and friendly, with giving dental health education scored the lowest (77.5%). As for Dental Surgery Assistants, they achieved the highest scores (100%) for the ability and confidence in carrying out their duties and being neatly dressed. Their lowest scores of 80.0% relates to being considerate on patients. Upon comparing the satisfaction level of stakeholders between the three categories, the Dental Nurses scored the highest for all three domains *i.e.* knowledge - 96.5%, skills - 96.9% and attitude/discipline - 99.3%. **Conclusion:** Generally, the stakeholders were very satisfied with performances of the graduates of the institution. It reflected on the effectiveness of academic input and the curriculum used in their training.



Application for Conduct of Postgraduate Research in Ministry of Health Malaysia

By: Dr. Yaw Siew Lian
@ Mesyuarat National Oral Health Research
Initiative (NOHRI) Bil. 1/2013, 22 April 2013
Oral Health Division MOH

OUTLINE OF PRESENTATION

I. Introduction

II. Circulars For The Conduct Of
Research In MOH Facilities

III. Procedures Involved & Feedback
from NOHRI members

I. Introduction

- Conduct of Post-graduate research where MOH facilities or MOH Staff are involved.
- Involve both Masters and Ph.D Students
- Objective of briefing:
 - clarify procedures involved towards a smoother processing of applications received by this Division
 - highlight the need to seek approval of DG of Health Malaysia for publications on research findings involving MOH facilities or staff

II. Circulars For The Conduct Of Research In MOH Facilities

- *Surat Pekeliling Ketua Pengarah Kesihatan Bil. 9/2007 [ruj. (1) dlm KKM/NIHSEC/03/0301-01 btkh. 05 Sept. 2007]
(Garispanduan Institut Kesihatan Negara Mengenai Penyelidikan Yang Dijalankan di Institusi dan Fasilitas KKM)*
- *Surat Pekeliling Ketua Pengarah Kesihatan Bil. 1/2013 [ruj. (18) dlm KKM/NIHSEC/100-1/1/1 btkh. 04 Januari 2013]*

Surat Pekeliling Ketua Pengarah Kesihatan Malaysia Bil. 9/2007

1). Registration of research

- Research involving MOH personnel /research to be conducted in MOH facility / funded by MOH research grant
- <https://www.nmrr.gov.my>
- Submission reviewed and approval by the MOH Research and Ethics Committee (MREC) for research involving ethical aspects

2). Publication of research

- Publication approval by Ketua Pengarah Kesihatan Malaysia for research publication

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National Medical Research Register

The NMRR is the web based tool designed to support the implementation of the [National Institute of Health NIH guideline](#) on the conduct of research in the Ministry of Health Malaysia (MOH)

Current MOH policy on research, as specified in the guideline, requires:

- Registration of all research that involves MOH personnel OR that is to be conducted in MOH facility OR to be funded by MOH research grant
- Review & approval of the research by a designated entity to whom authority has been delegated for the purpose
- In addition, research involving human subjects requires prior review and approval by the MOH Research and Ethics Committee (MREC)
- Approval of all research publications, whether in the form of research report, journal article or conference proceeding, by the NIH initially and thereafter by the Director General of MOH

The NMRR is thus specifically designed to enable:

1. Online registration of research. This brings us in line with international practice which requires medical research, especially clinical trial, to be registered in publicly accessible research registers. This is to ensure transparency and to increase public trust in the conduct of medical research; as well as to inform physicians and prospective volunteers about ongoing research in which they may wish to enroll.
2. Online submission to an appropriate authority for approval, as well as online review of the submitted research by relevant appointed reviewers. The online system ought to reduce the research review time as well as to enable investigators to track the status of their research online
3. Online submission of research publication to the NIH for approval
4. Finally, the NMRR also enable MOH management to document the level of

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Ensuring that evidence is put into practice
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INSTITUTE OF MEDICAL RESEARCH
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Surat Pekeliling Ketua Pengarah Kesihatan Malaysia Bil. 1/2013

1). Registration of research

- Research involving MOH personnel /research to be conducted in MOH facility / funded by MOH research grant
- <https://www.nmrr.gov.my>
- Submission reviewed and approval by the MOH Research and Ethics Committee (MREC) for research involving ethical aspects

2). Publication of research

- Publication approval by *Ketua Pengarah Kesihatan Malaysia* for research publication. Inclusion of statement below:

The author(s) would like to thank the Director of Health Malaysia for permission to publish this paper.

Surat Pekeliling Ketua Pengarah Kesihatan Malaysia Bil. 1/2013 (cont.)

3). Presentation of research involving MOH facilities/staff

- Application for approval to present is to reach NIH Secretariat at least **3 weeks before date of presentation.**
- Application can be submitted either by student concerned or co-researcher from MOH.

III. Procedures Involved

1. Send in concept paper to Principal Director of Oral Health, MOH

2. Reply from OHD MOH

3. Clearance of University Procedures eg. ethical reviews at University Committees, etc.

III. Procedures Involved (cont.)

4. Initial Registration with NMRR

5. Submit Full Proposal & Investigator Agreement Form to OHD MOH

6. Finalise NMRR Registration

III. Procedures Involved (cont.)

7. Brief State TPKN's, if necessary.

8. A copy of research report be given to OHD MOH.

Acknowledgement

Dr. Khairiyah bt Abd Muttalib
Principal Director
Oral Health Division MOH

All NOHRI Members at Mesy. NOHRI Bil.1/2013
@ 22 April 2013



Thank You