Malaysian Association for Prosthodontics

AAP
Asian Academy of Prosthodontics

11th Biennial Congress of Asian Academy of Prosthodontics
8th Scientific Conference & AGM of Malaysian Association for Prosthodontics

Abstract Book

21 - 23 SEPTEMBER 2018 | HOTEL ISTANA , KUALA LUMPUR

Original Study - Competition

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OSC1 Assessment of Cytotoxicity of Microcrystalline Cellulose Reinforced Denture Base Resin

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Purpose: Microcrystalline cellulose (MCC) of the oil palm biomass, with its remarkable reinforcing capability and low density has lately been used in the development of environmentally friendly polymer composites. It also enhances the mechanical properties of the polymers and has good aesthetic attributes. The aim of this in vitro study was to determine the cytotoxicity of acrylic denture base resin (DBR) material reinforced with oil palm based MCC in different concentrations. Materials and Methods: The test specimens were divided into 3 groups comprising of three MCC reinforced poly methyl methacrylate (PMMA) at different concentrations and were compared with the conventional and commercially available high impact PMMA. Cylindrical samples measuring 5.0±0.2 mm in diameter and 3.3±0.2 mm in height were prepared according to ISO 10993-12 for all the 5 groups. Three samples (n=3) were prepared for each group. The effect of the specimens on the cell viability of normal human oral fibroblasts (NHOFs) was examined by MTT assay. Data were statistically analyzed by one-way ANOVA and Tukey's test ($p < 0.05$). Results: The cell viability results of all test groups were more than 90%. This demonstrated that exposure of NHOFs to eluates from polymer-MCC mixture did not promote cell death or any toxic effects, when compared to the conventional high impact DBR material, indicating non-cytotoxicity in all groups. Conclusion: It can be concluded that correctly processed oil palm based MCC reinforced PMMA are not cytotoxic to NHOFs and are therefore safe for use as denture reinforced material.

OSC2 Proposed Enhancement on Objective Structured Clinical Examination for Pre-Clinical Dental Students

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OSCE is an assessment tool to measure performance and competency of the students, however in the Philippines, the examination of preclinical dental students is not standardized to assess the student's competency and skills. The assessment tool as it identifies the areas for improvement will provide opportunity to develop remedial programs for students who lack clinical competencies and thus pave the way for enhancing the current dental curriculum. Materials and Methods: The study used quantitative descriptive developmental design to evaluate the OSCE for proposed enhancement in pre-clinical students. An OSCE team was developed to identify the competency of the students by preparing an OSCE which is assessed by a standardized rubric and checklist. Pilot testing of the OSCE was done. Cronbach's alpha was used to test the reliability, experts determine face and content validity. Results: After experts' validation, each test items in OSCE was revised and modified according to the recommendation to ensure content clarity and to measure the desired competency of each program component. Results of the item analysis showed that in terms of difficulty index: 18.18% (Difficult), 54.4% (Moderate) and 30% (Easy). In terms of discrimination index: 21.21% (Poor), 48.48% (Good) and 30. 30% (Excellent). Test items with poor discrimination index with very low or very high difficulty scores were modified and improved. Using Kuder-Richardson Formula-21, the reliability index was obtained at 0.865. Conclusion: The study therefore conclude that the proposed enhancement on OSCE was found valid and reliable. It is recommended to continuously performed enhancement on OSCE to measure competencies required for students.

OSC3 Attitudes and Extent of the Practice of Denture Marking in Sri Lanka

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In 1972 the Federation Dentarie Internationale recommended the marking of all dentures. Ministry of Health Sri Lanka by a circular, informed the dental practitioners the need of marking the dentures in 2008. Aim: Objective of this study was to assess the dental surgeons' attitude and the practice of denture marking in Sri Lanka prior to recommending a clinically and forensically usable marking method. Methods: Study was carried out at the Faculty of Dental Sciences, University of Peradeniya, by way of a self-administered pretested questionnaire posted to the participants. Sample size was 524 out of which 44.2% were with postgraduate qualifications and 53.9% practicing in urban areas. Statistical analysis was done using SPSS 20.0. Chi square was used to test the relationship between categorical variables. (use of denture marking, what tools are used, knowledge of circular etc.). Results: Response rate was 44%. Denture marking is practiced as a routine measure only by 22% of the respondents. Most of the practitioners (78%) were unaware of the circular. Nevertheless 75% knew that the denture marking is used as an identification tool and 84% considered it as an import tool in identification. A statistical significance was observed between male and female dental practitioners in the awareness of the circular and awareness of the importance of denture marking. Conclusions: Denture marking is not routinely practiced by the Sri Lankan dental practitioners and most were unaware of the circular issued by the government. Nevertheless, majority accepted denture marking as an important identification tool.

OSC4 Retentive Ability and Incisal Bite Force between Aloe Vera and Polymethyl Vinyl Ether (Maleic Acid) as Adhesive Agent in Acrylic Complete Denture

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Patients with new acrylic complete denture, often lack confidence to use complete dentures to chew and speak, due to concerns about its lack of retention and pain. Application of denture adhesive can help overcome this problem. Denture adhesive products on the market was made from natural (Aloe vera) and synthetic (Poly(methylvinylether/maleic acid)). Aim: This study aimed to compare denture adhesive that was made from these ingredients. Materials and Methods: This study used true experimental method. 10 samples from patients that fulfilled the inclusion criteria, using complete denture acrylic which were made according to the procedure at the Prosthodontics Faculty of dentistry UNPAD Bandung were recruited. Samples were tested in three groups, without denture adhesive as control, and two groups intervention denture adhesive that was made from Aloe vera and Poly(methylvinylether/maleic acid). Retentive ability on incisal bite force was measured by Pressure Transducer. Results: Analysis of incisal bite force difference from denture adhesive that was made from Aloe vera compared with Poly(methylvinylether/maleic acid) showed significant difference with p-value < 0.05. Incisal bite force of Aloe Vera denture adhesive showed higher than Poly(methylvinylether/maleic acid). Analysis of time of acrylic complete denture can survive in place, showed that Poly(methylvinylether/maleic acid) denture adhesive last longer from denture adhesive that was made from Aloe vera. It showed highly significant difference with p-value < 0.01. Conclusion: Aloe vera had better incisal bite force between the 3 treatments, and Poly(methylvinylether/maleic acid) had longer time of acrylic complete denture can survive in place than others.

OSC5

Vertical Dimension of Rest Measurement Using Phonetic Method and Digital Photo Analysis

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Aim: The purpose of this study was to compare the vertical dimension of rest (VDR) measurement using phonetic and digital photo analysis methods. Materials and Methods: Forty dentate subjects with a mean age of 21 were enrolled. Inclusion criteria were subjects with Angle class I malocclusion, with normal overjet and overbite, no history of wearing orthodontics appliances, and no face deformities or assimetry. Phonetic method to assess the VDR was by measuring the distance between 2 points, one at the tip of nose and the other at the chin using digital vernier caliper. This was measured while the subject pronounced the letter m. In the photo analysis method, subjects were photographed with a distance of 56 cm from the tip of the nose to the lens while the subjects pronounced the letter m. Measurement on the phe photograph was made using Corel Draw X5 application. Results: The results of independent sample t-test showed no significant differences between vertical dimension of rest measurement from phonetic and photo analysis method. Conclusion: There was no difference in the VDR measurement between phonetic and photo analysis methods.

OSC6

An Audit on the Efficiency of Chair-Mounted LED Light Curing Units in Faculty of Dentistry, Universiti Teknologi MARA, Malaysia

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Objective: Composite resin restorations could fail due to ineffective polymerization. The aim of this clinical audit was to measure the irradiance of chair-mounted LED Light Curing Units (LCUs) in the Faculty of Dentistry, University Teknologi MARA,Malaysia. Materials and Methods: The irradiance of 119 chair-mounted LCUs was measured using digital LED radiometer (SDI LED Radiometer, SDI,Germany) by placing the light cure tip on the sensor of the radiometer for 10 seconds. Three readings per unit were recorded and the mean irradiance calculated. Details of LCUs including baseline values, location, serial number of LCUs body, date of purchase and last maintenance were documented. In addition, the tips were also evaluated qualitatively. The individual unit irradiance was analyzed by comparing recorded value against the baseline suggested by manufacturer. The gold standard was to have all LCUs irradiance within± 10% of the manufacturer specification. Results: The chair-mounted LCU consist of 105 on basic dental unit (BDU) and 14 on specialist dental unit (SDU) of which each category has a different baseline value. Only 8% of the LCUs complied the gold standard. 98% (n=103) of LCU on BDUs exceeded the gold standard compared to only 28% of the LCU on SDUs. The mean irradiance for chair-mounted BDUs was 1435mW/cm2 which was 144% relative to the manufacturer specification compared to SDUs (86%). Qualitative observation found cracked, damaged and resin contamination of LCU tips. Conclusion: The mean irradiance of chair-mounted LCUs on BDUs exceeded manufacturer specification. However, lesser mean irradiance was observed for SDUs.

OSC7

Development of Prescale Film for Occlusal Force Analysis: A Pilot Study

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Aim: The aim of this study was to devise and optimise a design of pressure sensitive sheet known as Prescale film (Fujifilm Corp. Kuala Lumpur, Malaysia) for occlusal force analysis at the dental office and to compare occlusal forces using Prescale film with and without disposable polyethylene (PE) sleeve. Materials and methods: The development of Prescale film for occlusal force measurement initiated with the design of the film into horseshoe shape according to shape of the arches, and the film is fully covered by PE sleeve for hygienic reason. 10 dentate patients (27 to 44 year-old) were recruited in this pilot study. All patients were asked to bite on these two types of designs (Group A: with PE sleeve; Group B: without PE sleeve) and mean values were recorded. The films were calibrated for analysis using Pressure Distribution Mapping System FPD-8010E software (Fujifilm Corp., Tokyo, Japan). The data were statistically analysed using Wilcoxon signed rank test in SPSS version 23.0 statistical software. Results: The occlusal forces for Group A and Group B varied widely from 191.0N to 625.0N and from 197.0N to 609.0N respectively. However, no significance difference was found between these two groups, p value was 0.706 ($p > 0.05$). Conclusion: This finding proposed that Prescale film with PE sleeve can be used as a novel design to measure the occlusal forces of patients due to its accuracy, simplicity, hygienic, cost effective and easy to handle.

OSC8

Comparison of Maximum Occlusal Bite Force in New Complete Denture with Denture Adhesives: A Preliminary Study

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Aim: Green denture adhesive is a new formulation for denture adhesive which incorporates 10% of starch as its filler. In vitro testing results revealed that this product has superior properties than the existing commercial denture adhesive. Therefore, the purpose of this study was to compare the maximum occlusal biting forces (MOBF) between complete denture subjects without denture adhesive and with two different type of denture adhesives (Polident® and Green denture adhesive). Materials and Methods: This is a crossover, prospective study. Ten edentulous subjects with new maxillary and mandibular complete dentures were involved in this study (5 males and 5 females, mean age: 62 year-old). Subjects had been wearing the denture less than a year. The MOBF was measured using pressure sensitive sheet known as Prescale® film, where all subjects were asked to perform maximum clenching on the film. The measurement was made before the application of denture adhesive and 10 minutes following the application of Polident® and Green denture adhesive respectively. Data were statistically analysed using repeated measure ANOVA. Results: Both denture adhesives significantly ($p < 0.05$) improved MOBF in complete denture wearers. Polident® showed a slightly higher MOBF than Green denture adhesive. However, no significant difference seen between the two denture adhesives. Conclusion: The usage of denture adhesives improved the biting performance of complete denture however there was no difference in the outcome between novel Green denture adhesive and Polident®.

OSC9 Colour Stability and Matching Accuracy of Custom Dual Laminated Composite Resin Shade Guide

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Aims: Custom-dual-laminated shade guides are used to mimic closely the material and layering technique used in final restoration. This study aims to determine optimal time duration for custom-dual-laminated composite resin shade guides to reach colour stability after polymerization and to compare their colour matching accuracy with the conventional shade guides. Materials and Methods: 18 incisor shaped dual-laminated resin composite specimens from two commercially available composite resin materials; Group 1 (Ceram. X® One Enamel & Dentine) and Group 2 (Filtek™ Z350 XT) were prepared into shade A2, A3 and A3.5 according to manufacturers' instruction. Colour measurement done with spectrophotometer CIELab system immediately after polymerization (t0), 24 hours (t1), 7 days (t7), 14 days (t14) and 21 days (t21). The average values were obtained to calculate ΔE between the specimens and Vitapan classical shade guide at each post-curing time. Data was analysed using repeated measure ANOVA (SPSS 24) and acceptability threshold ($\Delta E \leq 3.3$) were used to determine matching accuracy. Results: ΔE were significant for all specimens until 24 hours for Group 1 and 7 days for Group 2. At the optimal time period, all specimen showed ΔE values greater than acceptability threshold ($\Delta E \leq 3.3$) except for Group 2 A2 shade. Conclusions: Colour stability of custom shade guides were reached at 24 hours for Group 1 and 7 days for Group 2 after polymerization. Only Group 2 A2 shade was accurately matched relative to conventional shade guides emphasizing the importance of using custom dual laminated shade guide for multi-layering technique.

OSC10 Observation of the Teeth Position in Cleft Lip and Palate Patients Using Three-Dimensional Assessment

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Aim: Patients with cleft lip and palate (CLP) are often undergone the palatal expansion and bone grafting by orthodontic treatment in order to reduce the bone discrepancy. However, some patients show relapse on maxillary arch after prosthodontic treatment and result in the changes of occlusion. The aim of this study was to evaluate the teeth position in CLP patients who have long-term follow up using three-dimensional (3D) approach. Materials and methods: The maxillary models of two CLP patients were used in this study. First patient had fixed bridge in 1982 for the unilateral cleft. Since then the prosthesis has been fitted without problems. The second patient had partially removable denture in 1983 for the bilateral cleft. Models of patients taken recently and in the past were digitized by a desktop scanner. Then the 3D data were first superimposed and then analyzed using 3D evaluation software. The differences between the matched models were color-coded evaluated. Results: The 3D images of the first patient showed smaller change. However, the color-coded map of the second patient showed bigger differences in teeth position when the new model was compared to the old models. Conclusion: It was suggested that the difference in cleft type and the difference in prosthodontic design made the results discriminate from each other. Further study with more patients is needed for future research.

OSC11 Clinical Factors Affecting Occlusal Re-Establishment of Resin-Bonded Bridges Using Dahl Concept

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Aims: Application of Dahl concept is suggested to create space for metal retainer of the resin bonded bridge (RBB) to maximize the retainer coverage. The aim of this study was to evaluate the occlusal re-establishment using RBB that were cemented at an increased vertical dimension (Dahl Concept) and factors affecting it. Materials and Methods: A retrospective study was carried out where clinical data of patients who received RBBs from undergraduate students following the standardized treatment protocol were retrieved. At review, the occlusal re-establishment was assessed using Shimstock foil and compared with the pre-operative occlusal record. The details of patients' factors and prostheses parameters were obtained from the patients' record. The influence of these factors on the occlusal re-establishment was further analysed using multiple logistic regression test. Results: A total of 151 RBBs were reviewed in 109 patients after a minimum of 4 months follow-up period. 90% of subjects achieved full occlusal re-establishment (Shimstock holds between all opposing units as per pre-operative occlusal analysis) while 10% exhibited partial occlusal re-establishment (Shimstock holds on some of the opposing units). Patient factors (n=109); demographic, number of missing teeth and number of RBB, as well as RBB parameters (n=77); design, arch and site of RBB were not significantly ($p>0.05$) associated with the occlusal re-establishment. Conclusion: High percentage of subjects achieved full compared to partial occlusal re-establishment after placement of RBB. None of the clinical factors were significantly associated with the occlusal re-establishment.

OSC12 Dual Stent to Stabilize Implant Hand Piece

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Introduction: The limited access and visibility, along with proximity of the mandibular canal or maxillary sinus in the posterior region of alveolar ridge makes it difficult to place the implant in ideal angulation. This may lead to imprecise prosthetic rehabilitation due to the extreme angulations and misalignments incurred in the arch of placement. Using a surgical stent designed based on the diagnostic wax up could eliminate most of the clinical and laboratory complications. Discussion: In this article we are describing a novel technique for fabrication of a stent with dual assembly which helps the implantologist to place implant in predetermined position and angulation in posterior inaccessible areas. This stent guides the head of the hand piece by which the determined path of osteotomy is maintained. Since it is a dual assembly it could be easily inserted in the patient's with reduced oral orifices. Conclusion: This article provides a description about a technique which helps the implantologist to precisely position the implant effortlessly even in less accessible areas. The implant osteotomy in the posterior maxillary region becomes effortless and more precise using the dual assembly stent. The technique allows the hand piece to be stabilized throughout the osteotomy and hence positioning of the implant in the predetermined angulation without any error.

OSC13 Temporomandibular Disorders among Drug Users in Indonesia

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Introduction: Drug abuse is a major problem in Indonesia. The number of abuser is increasing every year. Many studies, surveys and case reports have described the adverse effects of drug abuse in systemic and oral health, but only few studies reported its specific effects on the temporomandibular joint. The prevalence of TMD in normal population ranged from 7% to 85%. Purpose: To determine the prevalence of temporomandibular disorder (TMD) and its possible risk factors among drug users in Indonesia. Materials and Methods: This is a cross sectional study which included 160 male, aged 18-45 years (mean: 29.72 ± 6.73), drug users who are undergoing rehabilitation at national rehabilitation center, Bogor, Indonesia. Subjects were asked to fill a questionnaire, followed by clinical examinations for TMD signs such as muscle tenderness, joint pain, joint clicking, and mouth opening limitation. Other possible risk factors such as bruxism, tooth wear, and oral habits were also examined. Collected data was analyzed for frequency distribution using IBM SPSS Statistics 22.0. Ethical clearance has been approved by the ethic committee, Universitas Indonesia. Result. TMD was diagnosed in 85% subjects, with joint clicking (70%) as the most common sign. Similar to that, high frequencies also found in tooth wear (72.5%), oral habits (60.6%) and bruxism (56.9%). Conclusion. TMD and its possible risk factors are frequently found among drug users in Indonesia.

OSC14 Comparative Evaluation of Wear Resistance of Stainless Steel Guiding Sleeve with and without Surface Coating

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Statement of problem: A reusable guiding sleeve loses its precision due to wear abrasion caused by the implant drill bit during guided implant surgical procedure. Purpose: To assess the amount of wear abrasion occurring on the inner surface of the guiding sleeve and also assess the wear resistance with surface coating done with hard chromium. Materials and methods: Tribometer was used to assess the wear abrasion. 8 samples were divided into two groups; 4 were stainless steel discs and 4 were stainless steel coated with chromium which represents the guide sleeve and 8 stainless steel pin counterparts which represents the implant drill. The tribometer was set to run at 800 rpm and 1200 rpm under the torque of 25 Ncm for 120 seconds on all the discs. The abrasion created by the tribometer was acquired using the data acquisition software. Normality tests Kolmogorov-Smirnov and Shapiro Wilks tests with P value < 0.05 was considered statistically significant. Results: The wear abrasion which occurred on the stainless steel discs were high when compared to the wear abrasion occurring on the stainless steel coated with chromium counterparts. Conclusion: Coating the stainless steel guide sleeve with hard chrome increased the hardness of the material, hard chrome influenced the tolerance to abrasion and wear resistance of the guide sleeves, surface alteration of the stainless steel by electroplating with hard chrome inhibited leaching of the metal into the implant site.

OSC15 Tas1r1/Tas1r3 Umami Receptor Expression Levels are Decreased in a Serum Starved Muscle Fiber Model of Atrophy

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Aim: Properly controlled nutrition is an important factor for the successful outcome of dental implant treatments. Following digestion, excess amino acids absorbed from the intestine are stored in skeletal muscle. During starvation, this reservoir of amino acid can be released from skeletal muscle into the blood supply. In skeletal muscle tissue, Tas1r1/Tas1r3 has been shown to repress autophagy, and regulate amino acids metabolism. However, the exact mechanism by which Tas1r1/Tas1r3 regulates the storage and release of amino acids remains to be elucidated. Here, we report that the expression levels of Tas1r1 and Tas1r3 are decreased upon serum starvation of muscle fibers in vitro. Materials and Methods: C2C12 cells were cultured and maintained in DMEM supplemented with 10% fetal bovine serum in 5% CO2. Single fibers of skeletal muscle and associated satellite cells were prepared from the extensor digitorum longus muscle of 8-week-old C57BL/6 mouse. To compare Tas1r1, Tas1r3, and Autophagy related genes expression in starved C2C12 cells, the datasets GSE925 were downloaded from the PubMed GEO and analyzed. Results: Tas1r1 and Tas1r3 was expressed by activated satellite cells, skeletal muscle stem cells and muscle fibers in vitro. The expression levels of Tas1r1/Tas1r3 in primary satellite cells increased with their differentiation. In silico and quantitative PCR analysis revealed that the expression levels of both Tas1r1 and Tas1r3 are decreased in serum-starved C2C12 cells. Conclusion: Our data suggests that the reduction of Tas1r1/Tas1r3 induces autophagy and contributes to the release of amino acids into the blood stream from skeletal muscle tissue.

OSC16 Effects of Streptozotocin-Induced Diabetes Mellitus on Peri-implantitis

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Aim: Diabetes mellitus (DM) is a risk factor associated with dental implant failure. However, the influence of DM on peri-implantitis is not fully understood. The aim of this study was to assess the effects of hyperglycemia state after osseointegration on peri-implant bone defects of ligature-induced peri-implantitis in rats. Materials and Methods: Twenty-four male Wistar rats at 5 weeks of age were used. Four weeks after extraction of maxillary first molars, titanium implants (1.8 x 2 mm) were placed. After one month of healing, the healing abutments were installed. The rats were divided into control (N-DM), diabetic (DM) and insulin groups (DM-I). DM group was induced by a single injection of 50mg/kg streptozotocin (STZ). N-DM group received only saline. DM-I group received subcutaneous dose of insulin twice a day. Silk ligatures were placed sub-marginally around the abutments only on the right side (ligature side) to induce plaque associated peri-implant inflammation. The implants on the left side were not ligated (non-ligature side). The samples were analyzed radiologically to measure bone level change at 28 days after ligature. Results: Micro-CT revealed significantly greater bone loss at DM group compared to N-DM group on the non-ligature side. On the other hand, the alveolar bone loss progression was observed on the ligature side in all groups. However, there are no significant differences between three groups. Conclusion: Within the limitations of the animal study, these results suggested that poor glycemic control and poor plaque control after osseointegration leads to an increased risk for peri-implantitis.

OSC17

Removable Prosthodontic Workload of Dental Technologists in Faculty of Dentistry, Universiti Teknologi MARA: A Clinical Audit

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Aim: This clinical audit was aimed to assess the workload of dental technologists based in Removable Prosthodontic Laboratory, Faculty of Dentistry, Universiti Teknologi MARA. Materials and Methods: A retrospective clinical audit was carried out from 1st January 2016 until 31st December 2017 using data derived from monthly returns of the dental technologists. Data regarding removable prosthodontic cases of all modes and their teaching and learning (T&L) activities were systematically extracted. Data were tabulated and descriptive analysis was performed. Results: There was a two-fold increase in total of removable prosthodontic cases from 2016 to 2017. Maxillofacial prosthodontic cases increased markedly followed by complete denture cases. Double increment of special tray works, cobalt-chromium partial denture cases and denture repair works were also observed. On average a dental technologist attended 9 cases per month in 2016 and increased to 14 cases in the following year. Although there was a newly recruited dental technologist in 2017, the workload still escalated. For T&L, they were involved in performing demonstration, laboratory work supervision and fabricating training models which comprises around 32% (50 hours) of their working hours per month. Conclusion: The workload of a dental technologist was increased 68% from year 2016 to 2017. However, the T&L workload remains constant for both years.

OSC18

A Systematic Review and Meta-Analysis on Weathering and Aging Effect of Maxillofacial Silicone's Physical Properties

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Aim: This review systematically compares the changes on the physical properties of maxillofacial prosthetic materials in terms of (1) without aging, (2) after natural or artificial accelerated aging, (3) after outdoor weathering. Materials and Methods: Relevant articles based on a PICO model and Prisma flowchart were identified using an electronic search in the PubMed, Scopus and Google Scholar databases. Linear Correlation test of the selected 37 articles were performed, following a Kappa-Concordance analysis for interobserver agreement. Random effects meta-analysis of 5 studies out of 37, and also individual subgroup analysis were done by Forest plot to compare the effect of outdoor weathering and natural/artificial/accelerated aging on the tensile strength properties of specific maxillofacial silicone elastomers. Results: Amongst the 37 articles, 14 were without aging, 15 with accelerated aging, 7 had outdoor weathering, and 1 contained both artificial aging and outdoor weathering. The correlation coefficient ($r = 0.957$) indicates a rapid linear increase in the number of published articles since 1969. The meta-analysis of the 5 studies together (effect size: 0.497; 95% confidence interval [CI]: 0.231, 1.073), and the 2 subgroup analysis (effect size: 0.317, 95% confidence interval [CI]: 0.137, 0.733; effect size: 0.471, 95% confidence interval [CI]: 0.175, 1.266 respectively) all favored case groups, indicating that tensile strength is affected by aging. Conclusion: Aging and weathering greatly affects silicone's physical properties. Thus, modified facial silicones need to be identified to provide sufficient resistance against different aging conditions.

OSC19

Customized Liquid Ocular Prosthesis for Anophthalmic Patients Suffering from Dry Eye: A Clinical Study

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Problem: Prosthetic eyes often cause dryness, irritation and inflammation of the anophthalmic sockets. Purpose: To reduce the discomfort caused due to dryness of ocular prosthesis by a custom-made hollow ocular acrylic prosthesis which is filled with lubricant drops. Material And Method: Thirty-eight patients wearing unilateral artificial eye for more than 6 months were evaluated. An innovative method of fabricating customized hollow prosthesis is described. The prosthesis were incorporated with a hollow reservoir containing lubricant, which was slowly released onto the prosthetic surface, thus reducing dryness. The artificial tear substitutes along with cyclosporine A 0.05% was used as lubricant. The patients were then evaluated using a questionnaire, regarding the comfort, inflammation, dryness, soreness or pain and the ease of use of prosthesis. The questionnaire was filled twice, once on the 1st appointment to evaluate already worn prosthesis and the second on the scheduled appointment three months after the delivery of custom made hollow prosthesis. The statistical analysis was done by using "CHI-SQAURE" test and the 5% level of significance had been used. Result: Post insertion of hollow prosthesis, the dryness scale reduced to an average of 0.5 from 3.75. Similarly, there was marked reduction in irritation & feeling of discomfort. The signs of inflammation (redness & Discharge) showed reduction in score from 3.75 (4.5 in stock eye and 3 in custom eye) to about 1.5. Conclusion: Within limitations of the study, it was concluded that continuous flow of lubricant onto the dry prosthetic eye helps in reducing dryness, irritation, discomfort, soreness and inflammation, thereby increasing patient's acceptance and comfort.

OSC20

Factors Affecting Dimensions of The 3D Ocular Prosthesis in Patients Rehabilitated at Mahidol Unversity

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Aims: The ocular prostheses have been widely applied for enucleated and eviscerated patients in accordance with improvement of esthetics and quality of life. This study aimed to evaluate four factors affecting dimensions of the 'custom-made ocular prosthesis' in patients rehabilitated at Mahidol University. Materials and Methods: A cross-sectional study was conducted on non-irradiated and healthy anophthalmic patients, including 82 subjects (36 females and 46 males) aged above 15 (40.33 ± 3.74) years old. All 82 custom-made ocular prostheses, fabricated following the Mahidol University's patent, were measured with a digital caliper (Mitutoyo 573 Digimatic Absolute Point Caliper) in horizontal, vertical, and anteroposterior (thickness) dimensions. Four main factors (age, gender, surgical techniques including evisceration and enucleation, and implantation of intra-orbital implant after the surgical removal) were evaluated in relations to the ocular prosthesis. The data were statistically analyzed using multifactorial ANOVA ($p<0.05$). Results: The multifactorial ANOVA showed no significant differences in vertical and horizontal dimensions among three factors: age, gender, and surgery ($p>0.05$). However, regarding thickness consideration, statistically significant difference was found in accordance to the surgical technique factor ($p=0.012$), while three measured dimensions were significantly different between two groups with and without implantation factor ($p<0.05$). Conclusion: This study presents the first set of data for the 3D ocular prosthesis in patients rehabilitated at Mahidol University. The factors of age and gender might not affect in all three dimensions of the ocular prosthesis, however the surgical technique could influent the thickness of the ocular prosthesis, and implantation could affect all dimensions.

OSC21 Morphological, Mechanical and Biological Properties of Silver Nanoparticle Decorated Denture Base Polymer

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Aim: Biofilm formation and clinical fracture are the most common problems of poly(methylmethacrylate) (PMMA) based denture base materials. This study aimed to investigate the effect of incorporation of PMMA with silver nanoparticles (AgNPs) and evaluation of its mechanical and biologic performance. Materials And Methods: PMMA were incorporated with 1, 2, 5 and 10wt% AgNPs. Various physiochemical characterizations were done using X-Ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), and Atomic Force Microscopy (AFM). Mechanical properties were statistically analysed using Post hoc Bonferroni test. Cytotoxic studies were done with MTT assay. Biofilm formation was checked against Candida albicans and Streptococcus mutans. Results: Morphologic analysis revealed uniform distribution of nanoparticle in the matrix. The surface roughness was proportionate with the amount of nanoparticle added. Tensile strength, modulus of elasticity, flexural strength and flexural modulus were improved by the addition of up to 5 wt % of AgNPs with statistical significance. SEM micrographs revealed the fracture resistance of AgNPs by the reduction in the size and direction of cracks. The cytotoxic studies carried out on PMMA/AgNPs revealed good biocompatibility. The composite also showed reduction in the adherence of Streptococcus mutans and Candida albicans. Conclusion: The results indicate that doping PMMA with AgNPs enhances the mechanical properties of the system. The good biocompatibility and anti-biofilm property revealed by this novel system is suitable for various prosthodontic applications such dentures, obturators, ocular prosthesis and cranial prosthesis.

OSC22 Comparative Study of Flexural and Compressive Strength of Flexible Dentures

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Poly-methyl methacrylate (PMMA) has been used as a denture base material despite having several downsides such as brittleness, difficult insertion, possible source of allergen and others. The continual striving for better denture base materials has led to the utilization of flexible nylon-based materials such as polyamide to construct denture bases recently. Aim: The aim of this study was to evaluate and compare the flexural and compressive strengths of different types of flexible denture materials. Materials & Methods: A silicone master mold was made according to ADA specification no. 12 measuring 65mmx10mmx3mm for evaluation of flexural strength, whereas sprues of 4mm diameter were used to produce samples for compressive strength test. A total of 48 samples for flexible materials, 12 from each type: Breflex (BredentTM, United Kingdom) and Flexifast (SabilexTM, Argentina) were fabricated using injection molded process. 24 samples of Implacryl (VertexTM-Dental, Netherlands) were also fabricated using compression molded process as control group. Non-parametric test, Kruskal-Wallis test and Mann-Whitney U test were used to compare between the different groups. Results: Results showed that Flexifast and Breflex have similar flexural strengths ($p=0.410 >0.05$), whereas Implacryl has significantly higher strength ($p<0.05$). The compressive strength test showed significantly different strengths ($p<0.05$), with Flexifast being the lowest, followed by Breflex, Implacryl showed the highest compressive strength. Conclusion: In conclusion, the study showed that, Implacryl has the highest flexural strength and compressive strength. Flexifast and Breflex have similar flexural strengths but Flexifast has lower compressive strength than Breflex.

OSC23 In-Vitro Color Stability of Two Indirect Zirconium Silicate Composite Restorative Materials

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Aim: To compare the color stability of Ceramage and Ceramage DUO indirect composite restorative materials (Shofu Inc., Kyoto, Japan) using a thermocycling stain challenge model to simulate the complex effects of staining foods and beverages in the oral environment. Materials and Methods: 10 disc each from shade A1 subtypes (Dentin Body A1B, Incisal 58, and Translucent HVT) of Ceramage and 10 disc each from shade A1 subtypes of (Dentin Body A1B, Incisal 58, and Translucent HVT) of Ceramage DUO were subjected to thermocycling stain challenge in soy sauce and lemon iced tea at 500 cycles followed by 10 minutes of ultrasonic cleaning. L*, a* and b* color coordinates were measured spectrophotometrically and the mean color difference (ΔE) at different stages of experiment were measured and compared using repeated measure ANOVA (within-between group). Results: Ceramage showed greater stain retention compared to Ceramage DUO. There was a significant difference in color changes at all experimental stages ($F=65.747b$, $p<0.0001$) and the mean color difference (ΔE) for Ceramage does not overlap with the corresponding confidence interval of the Ceramage DUO. Conclusion: Ceramage DUO showed significantly greater color stability compared to Ceramage indirect composite.

OSC24 Need for a Panoramic Radiographic Assessment Prior to Prosthetic Treatment in Complete Edentulous Patients

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Aim: The purpose of this study was to evaluate the frequency of positive radiographicfindings in pre-prosthetic panoramic radiographs of edentulous arches and to emphasizethe need for a radiographic examination of edentulous patients before fabricating complete dentures. Materials and Methods: A total of 60 completely edentulous patients who were presented for the construction of new dentures and the replacement dentureswere selected within aperiod of one year. Patients with special needs ormentally retarded were excluded from the study. Panoramic radiograph was taken using CBCT machine (PaX-Duo 3D, Korea) with standard radiographic exposures and they were evaluated by a radiologistin the computer screen without any magnification for the following radiographic findings: the location of the mandibular canal, the position of the mental foramen and maxillary sinus, relative thickness of the soft tissue covering the edentulous ridge, retained roots, impacted teeth and foreign bodies. Results: The mean age of the population was 65.7 (SD±8.9) and it was consisted 62% females and 38% males. Among the population 8.3% and 6.6% were having retained roots and impacted teeth respectively. The location of theinter-alveolar canal was not clearin 31% of the radiographs in both sides. The position of the mental foramen was located 20.5 mm (SD±4.20) from the midline. The soft tissue coverage was 1-3mm in 81.3% and bone height in related to the maxillary sinus was >5mm in 16% cases. The probability of having positive radiological findings in related to denture bearing area was significant ($p<0.05$). Conclusion: With the findings of positive radiological findings among the study sample it can be considered to take panoramic radiographbefore fabricating complete dentures in edentulous mouth with the correlation of clinical findings and these parameters will be useful in assessing the edentulous patients as candidates for implant therapy depends on radiographic imaging.

OSC25 Success-Rate and Patient-Satisfaction of Immediately Loaded Single Versus Two Implant-Retained Mandibular Overdentures: Randomized Controlled Trial

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Aim: Aim of this study was to evaluate crestal bone level changes and patient satisfaction level of single versus two Titanium-Zirconium (Ti-Zr) implants used for mandibular overdentures. Materials and methods: A randomized controlled trial with a follow-up period of 1-year has been planned and the interim results are presented with 34 Ti-Zr implants (12 single, 11 double) placed in 23 patients (average age 64-years). All implants were restored with immediate loading protocols using Locator® attachments to mandibular overdentures by single operator and observed at 1 month and 1 year. The crestal-bone-level changes were measured with digital periapical radiographs using inbuilt software. The patient-satisfaction level was evaluated using 100 mm visual analogue scale (VAS) with readings presented in percentage. Results: Out of 34, 1-median implant was failed to osseointegrate within 20-days. Two-implant group (n=22) showed crestal bone-loss of 0.23 mm at 1-month and 0.67 mm at 1-year recall. Single-implant group (n=11) showed average crestal bone loss of 0.39 mm at 1-month and 0.88 mm at 1-year recall. Patient satisfaction level (mean VAS score) was increased from 38.3% to 49.7% after 1-month and to 54.5% after 1-year for single-implant-patients and from 40.5% to 54.8% after 1-month and to 58.9% after 1-year for two-implant-patients. Conclusion: Average 0.16 mm (in 1-month) and 0.21 mm (in 1-year) more crestal bone loss was observed in single-implant-patients than two-implant-patients. Patients' satisfaction level was improved by 11.4% in 1-month and by 16.2% in 1-year for single-implant-patients and by 14.3% in 1-month and by 18.4% in 1-year for two-implant-patients.

OSC26 Characterization and Physico-Chemical Evaluation of a Novel Glass Ionomer Nanozirconia- Silica- Hydroxyapatite Hybrid Material

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Glass ionomer cement (GIC) is among popularly used material in prosthodontics for core build-up and cementation of prostheses. A novel GIC-nanozirconia- silica- hydroxyapatite (GIC-nanoZrO2-SiO2-HA) has been developed which has better hardness and aesthetics. Aim: To characterize and evaluate the fluoride release and color stability of a new GIC-nanoZrO2-SiO2-HA hybrid material. Materials and Methods: The nanoZrO2-SiO2-HA was synthesized using modified sol-gel technique and the nanopowder was characterized using TEM and FTIR. Ten samples per group were prepared by adding 5% by weight of nanoZrO2-SiO2-HA powder into the conventional GIC (Fuji IX). The color stability was measured with a spectrophotometer using CIE L*a*b* system, and the fluoride release was measured using an ISE meter, over a one-month period. The data was statistically analysed using repeated measures ANOVA. Results: TEM micrographs confirmed that all particles were in the nanoscale range with spherical ZrO2 and SiO2 particles embedded in the voids between rod-shaped HA crystallites. FTIR confirmed the presence of functional groups corresponding to each element. The statistical analysis demonstrated that the ΔE values for GIC-nanoZrO2-SiO2-HA were lower than conventional GIC indicative of greater color stability and fluoride release was significantly higher for all the time intervals ($p<0.05$). Conclusion: The addition of nanoZrO2-SiO2-HA has improved the physico-chemical properties of GIC with greater color stability and fluoride elusion making it a potentially stronger anticariogenic aesthetic dental material for the future.

OSC27 The Effect of Mangrove (Avicennia marina) Leaves Extract-based Denture Cleanser on the Growth of Candida Albicans: A Pilot in Vitro Study

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Background: Candida Albicans is one of oral microorganism which most frequently attached on denture base and may cause inflammation on oral mucosa called denture stomatitis. Reducing the number of these microorganisms has been related to a decreased incidence of such occurrences. Avicennia marina leaves is traditional medicine plants that can be used as antibacterial and antifungal agent because it contains tannin, alkaloid, saponin, flavonoid, and phenol. Objectives: this study aims to determine the effect of mangrove leaves extract (Avicennia marina) with various concentration against the growth of Candida albicans. Materials and Methods: Mangrove leaves extract at concentrations of 5%, 10%, 20%, 30%, 40% was prepared. Five pieces of paper disk were immersed in each concentration of the extract, which was then placed onto agar plates that have been inoculated with Candida albicans. A commercially available denture cleanser product was used as control. After 24 hours of incubation, the inhibition zone diameters were measured and analyzed. Results: the statistical results of the one-way ANOVA illustrated that the different concentrations of Mangrove leaves extract had a significant influence on the inhibition of Candida albicans ($p< 0,05$). Turkey's test implied that there were significant differences between all the concentrations of Mangrove leaves extract used in this experiment ($p< 0,05$). Mangrove leaves extract at 5% concentration did not show inhibitory effects against Candida albicans. Conclusions: Different concentration of Mangrove leaves extract exhibited significant inhibitory effect towards Candida albicans. The effect started to appear at a minimum concentration of 10%.

OSC28 To Evaluate the Flexural Strength of Tectona Grandis Natural Fibre and Polyethylene Synthetic Fibre Reinforced PMMA Resin

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Aim: The polyethylene fibres made from polymer or copolymers of olefin hydrocarbon are thin, strong, easy to manipulate and exhibit excellent bonding. Tectona grandis fibres are teek wood fibres which are anti inflammatory, antibacterial, antioxidant, antiviral, cytotoxic, easily available and economical when compared to synthetic fibers. These fibres were reinforced with PMMA in this study. The aim of this study was to evaluate and compare the flexural strength of heat polymerized PMMA resin reinforced with natural and artificial fibers. Materials and Methods: A total of 15 samples are prepared by using a standardized stainless steel die with a dimension of 62×10×3mm. The samples were categorized into Group A: heat polymerized PMMA resin; Group B: heat polymerized PMMA resin reinforced with polyethylene fibres which were soaked in monomer for 10 minutes and then mixed with polymer; Group C: heat polymerized PMMA resin reinforced with 24 hours heat treated tectona grandis fibers, which were mixed with polymer. Monomer and polymer were mixed in the ratio of 3: 1 and the processing was done by conventional flasking method. The retrived samples were finished, polished and tested by 3-point bending test. The obtained values were statistically analysed. Result: Group C showed a statistically significant value with improved flexural strength than Group A and B. Conclusion: The Tectona grandis natural fibres reinforced PMMA can be a best replacement for synthetic fibres reinforced PMMA.

OSC29 Relationship between Occlusion Schemes and Temporomandibular Disorders in Malaysian Population

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Aim/Purpose: To evaluate the type of occlusal schemes and its relation to temporomandibular disorders and to compare their relation in different ethnic groups of Malaysia. Materials and methods: The population for this study consisted of 240 human subjects with the age ranges from 20-30 years. The subjects were divided into 3 groups based on the ethnicity. Group A: 80 human subjects of Chinese origin, Group B: 80 human subjects of Indian origin and, Group C: 80 human subjects of Malay origin. The static and dynamic occlusion of each subject was assessed by intraoral examination. Occlusion on laterotrusive movements was categorized into four groups: Group I: Canine guided occlusion on both the sides (CGB), Group II: Canine guided occlusion on left side and group function occlusion on right side (CGL+GFR), Group III: Canine guided occlusion on right side and group function occlusion on left side (CGR+GFL) and, Group IV: Group function occlusion on both the sides (GFB). The Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) Axis-I was used as a guideline in clinical examination procedures. Results: Most prevalent occlusal scheme amongst all three races was found to be GFB occlusion with Malays predominance followed by Chinese and Indians with p value 0.001. TMD's was found to be most prevalent in Chinese population followed by Malays and Indians with p value 0.028. It was also noted that there is correlation between TMD's and occlusion schemes and it was found that TMD's are more prevalent in GFB, followed by CGB, CGL+GFR and CGR+GFL occlusal schemes with p value 0.04. Conclusion: GFB has an influence in developing TMD's, but we could not find any significant difference in occlusion schemes and its relation with TMD's amongst three racial groups studied. Further long term randomized clinical trials studies with larger sample size are required.

OSC30 Estimation of Psychological and Oxidative Salivary Stress Markers in Edentulous Patients Wearing Complete Dentures

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Purpose: The study was done to determine the levels of salivary alpha amylase (SAA), Thio barbituric acid reactive substances (TBARS), Nitric oxide (NO) in saliva during pre and post denture insertion. Materials and methods: Fifty patients were divided into two groups (A & B) for evaluating three biomarkers (SAA, TBARS, NO) in salivary samples. Un-stimulated saliva was collected at one time point from healthy dentate individuals (Group A) and at three different time intervals (before denture insertion, 1hour after denture insertion, one week after denture insertion) from edentulous individuals (Group B). Protocol was followed in sample handling, transport, and storage. The analysis of the SAA, TBARS and NO was done by biochemical enzymatic assay, lipid peroxidation and Griess reaction. The values obtained were statistically analyzed using t-test. Results: The results showed markers levels where different in the intervention group. The mean levels of SAA was 8.26 ± 1.32 min/ml during pre denture insertion and the decreased to 3.44± 1.25 min/ml in post denture insertion phase in the intervention group. TBARS 14.33± 4.71 nm/ml, NO 22.92 ± 5.79 ng/ml were increased in 1 week post denture insertion. The results were statistically significant with $p < 0.001$. Conclusion: The psychological stress marker (SAA) decreased and Oxidative stress (TBARS, NO) increased with post denture insertion.

OSC31 The Effect of Temporomandibular Opening Index (Toi) Against Quadrant Numbers and Time Length of Posterior Teeth Loss

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Introduction: Temporomandibular disorder (TMD) is a dental or medical condition that affect mastication muscles or neighboring temporomandibular joint including all of its tissue. A person suffered from TMD may feel pain on TMJ or facial region. An assessment for TMD is protrusion, lateral movement of mandible, and maximum opening of the mouth. Dysharmony on one or more of that assessment could be a predictor of TMD. Objective: This study was done to understand the effect of quadrant number and the time length of posterior teeth loss against the Temporomandibular Opening Index (TOI). Materials and Method: This is a cross-sectional study. Subjects were taken from Yogyakarta population. There were 40 subjects: 10 were losing two quadrants of posterior teeth for 12 months; 10 were losing one quadrant of posterior teeth for 12 months; 10 were losing two quadrants of posterior teeth for 6 months; and 10 were losing one quadrant of posterior teeth for 6 months. Passive and active mouth opening were measured, then TOI were calculated using a formula. The data were tested using Two Way ANOVA test, then tested with post hoc of Least Significant Differences (LSD) test. $\alpha = 5\%$. Result: Means of TOI on all groups showed significant differences ($p<0,05$). Post hoc LSD test on all groups showed significant differences. Conclusion: There is a relationship between the number of quadrant and time length of posterior teeth loss on TOI caused by TMD with signs of the reduction of active mouth opening.

OSC32 Evaluation of the Bond Strength of New Tissue Conditioner with Addition of PMMA Resin

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Purpose: The in vitro study was to evaluate the influence on bond strength to PMMA denture base resin regard the new type tissue conditioner (NTU-TC) using acetyl tribute citrate (ATBC), acetyl tributyl citrate (ATBC) and a novel hyperbranched polyester (TAH). Materials and Methods: The study groups were divided into 4 combinations (n=10) of tissue conditioner, which added 5, 10, 15, and 20 weight percentages (wt%) poly(methyl methacrylate) (PMMA) to poly(ethyl methacrylate) (PEMA) powder and mixed with the liquid consisted of 78.3wt% ATBC, 8.7wt% TAH, and 13wt% alcohol, with gelation times between 120 and 180 seconds. The original NTU-TC was used as the control group for comparison. Each cylinder samples including 2 resin blocks and the tested tissue conditioner (7.07 cm2 cross-sectional area x 3 mm thickness) placed between the blocks. After immersion in water at 37°C for 0, 1, 3, 7, 14, and 28 d. The tensile bond strength was examined using a universal testing machine at a crosshead speed of 10 mm/min. The failure mode was also observed. Result: The tensile bond strength of control group was 0.46 MPa. Addition of 5, 10, 15 and 20 wt% PMMA to the NTU-TC showed similar values of bond strength. The failure mode among all the groups was all adhesive failure. Conclusion: Within the limitation of this study, addition of different weight percentages of PMMA to the powder of NTU-TC did not have the influence on the increase of bond strength to PMMA denture base resin.

OSC33 Biofunctionalization of Titanium with Cissus Quadrangularis

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Aim & Objective: To improve osseointegration and decrease healing period of titanium implants by coating with Cissus Quadrangularis extract. The objective of this study is to evaluate the osteogenic potential of Cissus Quadrangularis extract when coated on titanium discs. Materials & Methods: 32 titanium discs of 10mm diameter and 3mm height will be milled and used for this study. They were randomly allocated into two groups. Group 1 discs will not be coated and Group 2 discs will be coated with Cissus Quadrangularis extract. SEM analysis of surface coated samples will be performed. Evaluation of osteogenic potential will be carried out by performing a cell proliferation assay. Results: Study results are yet to be obtained. Conclusion: Cissus Quadrangularis extract coated titanium discs are expected to have more cell proliferation potential than control titanium discs.

OSC34 Correlation Between Applied Occlusal Load and Force Measured from Dental Prescale System

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Aim: Dental Prescale System (DPS) was used to measure absolute occlusal load in previous studies. In DPS, a pressure-sensitive wax wafer, bitten by the patients, will change color locally depending on the pressure levels exerted. The color density was used to estimate occlusal forces. The aim of this study was to investigate the accuracy of Dental Prescale System in measuring occlusal load. Materials and Methods: Compressive loads of 0.5, 1.0, 2.0 kgf were consecutively applied to a pair of opposing first molar teeth (D91S-200-MF, Nissin, Japan), which were mounted in maximal intercuspation, with the system pressure sheets (LLW, Fujifilm, Japan) interposed. The pressure sheets were later scanned. The total measured force (TMF), average measured pressure (AMP) and force at the most forceful area (P1) were analyzed using pressure analysis software. ANOVA and linear regression were used for statistical analysis. Results: The TMF measured by DPS at 0.5, 1.0, 2.0 kgf applied force were 1.073±0.206, 2.103±0.375, 4.573±0.212 kgf respectively; the AMP was 1.395±0.021, 1.540±0.049, 1.610±0.025 MPa and P1 was 0.845±0.253, 0.845±0.039, 0.988±0.041 MPa, respectively. Conclusion: Although a positive correlation was observed between TMF and applied loads, the forces estimated from Prescale system was considerably larger than applied loads. A non-linearly relation was observed between applied loads and both AMP and P1.

OSC35 Neuroscientific Evaluation of Periodontal Tactile with/without Sensory Integration Task: Comparison Between Incisor and Molar Teeth

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Aims: Oral cavity has various somatosensory receptors and many researches have discussed the relationship between oral sensation and brain function. We have reported that periodontal tactile input influences cerebral blood flows in the prefrontal cortex (CBFs-PFC). The purpose of this study was to investigate the differences of the PFC activities in biting between either incisor or molar teeth with/without sensory integration tasks, and assess the significance of periodontal tactile for the PFC activities. Materials and Methods: We enrolled 11 healthy young subjects (7 males and 4 females, age: 28±3.71). The CBFs-PFC was measured using a wearable near infrared spectroscopy (Hitachi, Tokyo, Japan). The tested teeth were central incisor and first molar. The experimental task to keep the occlusal force between 27.5±2.5 N was performed, and visual and auditory information were provided to keep occlusal force as sensory integration task. For non-sensory integration task, subjects were asked to bite the resin or silicone rubber block. Results: Significant increase in CBFs-PFC was observed through the sensory integration task by molar compared to that by incisor teeth. Conversely, no significant difference was found between incisor and molar teeth through the non-sensory integration task. The CBFs-PFC in the sensory integration task had a tendency to increase compared to those in the non-sensory integration task. Conclusion: Although the differences of the PFC activities in biting by either incisor or molar teeth were found in just the sensory integration task, the influence of sensory integration task with periodontal tactile on the PFC activities would be high compared with that of the non-sensory integration task.

OSC36 Relationship Between Occlusal Support and Total Dietary Fiber Intake

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Aim: Previous studies have revealed that reconstruction of occlusal support enhanced chewing ability, resulted in improvement of the nutritional status, however, most of these studies evaluated nutritional status by body mass index, energy intake or serum albumin level. In this study, we aimed to clarify the detailed relationship between occlusal support of molar teeth and ingested food and nutrients. Materials and Methods: Subjects were formed by patients who visited Kyushu dental university hospital (11 men, 34 women, average age 58.9 years). They were classified into two groups depending on occlusal support of molar teeth: Normal group (occlusal support of molar teeth was maintained on both sides, 6 men and 24 women, mean age 59.5 years) and Defective group (occlusal support of molar teeth was lost on one side or both sides, 5 males and 10 females, mean age 57.6 years). Occlusal support by dental prostheses such as removable or fixed denture was equated with occlusion support by natural teeth. Ingested foods and nutrients were evaluated using brief-type self-administered diet history questionnaire. Mann-Whitney's U test was used for statistical analysis. Results: The amount of intake energy, carbohydrate, protein and lipid intake were comparable in both groups. Total dietary fiber intake was significantly lower in the Defective group ($p=0.022$), and both the soluble and insoluble dietary fiber intake were significantly lower in the Defective group. Conclusion: Total dietary fiber intake decreases in subjects who lost posterior occlusal support, and it might be derived by the change of food ingestion habits.

OSC37 A Comparison Between Conventional V/S Digital Photography V/S Polarizing Filter Photography for Shade Selection

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Aim: There is an increased awareness for aesthetically pleasing restorations among patients in current practice. This study aims to determine which among the three named methods is better for shade selection in aesthetic dentistry. Materials and Methods: Two VITAPAN classical shade guides were used for this study. 9 shades were selected from the 1st shade guide (A1, A2, A3.5, B1, B2, B3, C1, C2, C3) and were randomized. A total of 10 selected participants were asked to identify each randomised shade with the 2nd shade guide. The Canon 5D camera with ISO 200, shutter speed 1/100sec, F22 was used for capturing images of the 2nd shade guide. Photoshop CS3 Software was used for developing the digital shade guide. The participants were asked to match the randomised shades from the 1st shade guide with the prepared digital shade guide. The 3rd photographic shade guide was prepared using a polarised filter on the Canon 5D camera with the same settings. The participants were asked to match randomised shades with the prepared photographic shade guide. Results: Total observations made during the study were 270. Cross table statistical analysis (Chi-square test) done using SPSS 20.0 showed statistically significant difference between conventional and digital photography (p=0.049). Analysis between digital photography and polarizing filter photography did not reveal a significant association(p=0.181). Conclusion: Digital photographic method was most accurate among the three shade selection methods. It can be used to obtain aesthetic results.

OSC38 Investigation with Questionnaires on Symptoms of "Physical Frailty" and "Eating Behaviors"

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Aim: "Frailty" is considered to be highly prevalent in old age, and malnutrition is regarded as a critical problem in population aging. Considering the importance of nutritional status related to the mastication or eating, it is necessary to consider the relationship between "frailty" and eating behaviors. In this study, a questionnaire survey was administered to investigate the subjective symptoms of "physical frailty " and eating behaviors, and examined the relationship between them. Materials and Methods: A total of 1378 subjects with ages ranging from 40s to 90s (548 men and 830 women, mean age 65.0±12.2 years) were enrolled. This study was approved by the Ethics Committee of the Tokushima University Hospital (No. 2404). Five items in the questionnaire on symptoms of frailty phenotype assessed "physical frailty". Eating behaviors were evaluated by 18 items in the questionnaire on "dietary recognition", "eating habits", and "eating actions" with using "YN questionnaire", reported in our previous study. All questionnaire items were evaluated on the four grades from 1 to 4, and higher scores represented a tendency toward functional decline and worsening. Results: The total "physical frailty" score was lowest in 60's and gradually increased with later age; however, scores for "eating habits" and "eating action" showed a decreasing tendency. The score for "eating habits" and "eating action", especially behaviors of "irregular meal times" (odds ratio: 1.323) and "not chewing well" (odds ratio: 1.222), has significant effect on total scores in symptoms of "physical frailty". Conclusion: The above results suggest that "eating habits" and "eating action", especially "irregular meal times" and "not chewing well", might be significant for assessing the symptoms of "physical frailty".

OSC39 Subjective and Objective Assessment of Oral Mucosa Moisture for Completely Edentulous Patients

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Aim: To assess subjectively and objectively the oral mucosa moisture in completely edentulous patients. To determine and compare the correlation of two different in-vivo techniques in measuring oral mucosa moisture. Materials and methods: A questionnaire comprising of 11 standard questions from "Xerostomia Inventory" were translated to regional language and used as subjective assessment. An oral moisture checking device was used for objective assessment. The sites selected for assessment were buccal, dorsal lingual and palatal mucosa. Results: Thirty patients of which 63% were > 60 years old and 37% were < 60 years old. There was a positive correlation between the subjective and objective methods of assessment. In this study, mean value for saliva wetness on the buccal mucosa was observed to be 27.1(+/- 5.1) and median of 29.0. The mean value for saliva wetness on the palatal mucosa was observed to be 16.7 (+/-3.7) median of 16.5. The mean value for saliva wetness on the dorsal lingual mucosa was observed to be 22.4. (+/-5.3) median of 21.1. It was observed that buccal and lingual mucosa were more reliable sites than palatal mucosa for objective assessment when correlated with subjective method. The normal range of oral moisture in healthy complete edentulous patients was found to be between 26 to 32. The oral moisture checking device measures the amount of moisture not only on the oral mucosal surface, but also in the epithelium, it provides a more accurate measure of the moisture status (dryness) of the oral mucosa than does saliva flow rate. Conclusion: The moisture checking device can be used for screening patients for oral dryness.

OSC40 Interrelationship of Tooth and Skin Colour Across Different Skin Tones in the Malaysian Population - A Pilot Study

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Aim: The procedure of tooth shade selection can be challenging in a fully edentulous with no existing teeth to act as a reference. The purpose of the study was to determine the correlation of skin shade with the tooth shade in individuals of different skin tones. Another objective of this study is to determine the effectiveness of obtaining CIELAB values of teeth by digital photography. Materials and Methods: Digital photographs of skin, teeth and shade tabs were taken for 72 subjects with different skin tones. The subjects were grouped into Types I, II, III & IV based on their skin tone. The CIELAB values of the skin tones and tooth were obtained using Adobe Photoshop version CS6 (Adobe Systems Incorporated, San Jose, CA, USA) and analysed with the Pearson's correlation analysis. For the second objective, the CIELAB values of the shade tabs Shade Guide I (Yamahachi Dental Mfg., co) were obtained with both digital photographs and the CM-2600d Spectrophotometer (Konica Minolta), and compared with the Mann-Whitney U test. Results: There was a strong positive correlation between the skin tone and tooth shade for Type I, Type II and Type III subjects ($p < 0.01$). Also, there was a significant difference of the "b" values between the spectrophotometer and digital photographic method of the tooth shades A1, A2, A3, B1 and B2 ($p < 0.05$). Conclusion: There is a positive correlation between skin tone and tooth shade. There is a significant difference in between the "b" values of the spectrophotometer method and digital photography method.

OSC41

Fabrication of Functional Hand Prosthesis Using 3D Printing and Electromyographic Synchronization - An Innovative Design

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Aim: To fabricate a dynamic hand prosthesis and programming it to achieve functional movements at minimal cost. Materials and methods: The primary design of the prosthesis is done digitally and it is simulated using 3-D printing and milled with light weight polyurethane material. For incorporating the dynamic movements into the prosthesis, motors and electromotors (flex sensomotors) which work based on the hex code programming are used. These additives allow free movements and functional movements in the prosthesis. Using electromyography (EMG) neuromuscular coordination is simulated from the individual to the prosthesis. Electromyography works based on the recording of muscle amplitude in microamperes with two sensors. One sensor transmits the actual amplitude levels of healthier muscular movements while the other sensor intensifies or deranges the value based on the muscle threshold of the individual. The amplitude values are recorded in C code programming format which is human interfacing language. This is then compiled into the assembled programming for the ease of evaluation. Results: Based on the design, functional and dynamic movements will be obtained in the hand prosthesis, which will improve the efficiency of rehabilitation thereby leading to future developments. Conclusion: Functionally active hand prosthesis at minimal cost will pave way for rehabilitating patients and improving their quality of life.

OSC42

Fabrication of Functional Hand Prosthesis Using 3D Printing and Electromyographic Synchronization - An Innovative Design

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OSC43

Preliminary Study of the Antibacterial Effects of Kaffir Lime Leaves on Streptococcus Mutans

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Aim: Kaffir lime has been reported to exhibit antibacterial and antioxidant effects. Streptococcus mutans has been considered the most important causative pathogen of dental caries. The aims of the present study were to investigate the potential antibacterial effects of water and tannin extracts of kaffir lime Citrus Hystrix leaves on S. mutans. Materials and Methods: Water and tannin were extracted from kaffir lime. S. mutans was revived in brain-heart infusion (BHI) broth and incubated at 370C for 24 h. Two-fold serial dilution of test substances was prepared. Using a 96-well plate, 50 uL of each concentration of the diluted substances was added into 1 x 106 cfu/mL of S. mutans. After 24 h of incubation, the absorbance of the samples was measured at 560 nm using the microplate reader. The minimum inhibitory concentration (MIC) of the extract was determined, and cells from each well were cultured on BHI agar for minimum bactericidal concentration (MBC). All tested substances were compared with 0.12% chlorhexidine as positive control and BHI broth as negative control. Results: Water and tannin extracted showed antibacterial activities against S.mutans with MIC ranged from 0.4 to 50.0 mg/ml. The MIC of water and tannin extracts were in the range of 1.5 – 12.0 mg/mL and 2.5 – 10.0 mg/mL, while their MBC were in the range of 3.0 – 6.0 mg/mL and 5.0 -10.0 mg/mL respectively. Conclusions: The findings highlight the ability of kaffir lime leaves extract to inhibit S. mutans activity, which may be beneficial as a substance with the therapeutic features in decreasing dental carries.

OSC44

Influence of Various Surface Treatments on the Bond Strength of Ceramic Veneered to Digitized Metal Coping

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Aim: To relate the efficiency of different surface modification such as: sand blasting, acid etching, acid etching with sand blasting and laser ablation on the bond strength of ceramic veneered to Direct Metal Laser Sintered coping. Materials and Methods: Fifty samples of Direct Metal Laser Sintered cylinders were made from Cobalt chromium super alloy using powder bed method. They were divided into five groups and were scrutinized via SEM after surface treatment. Shear bond strength test was accomplished using universal testing machine, where the samples were subjected to shear force at the alloy-ceramic interface at a crosshead speed of 0.5 mm/min. The outcomes were statistically evaluated by means of ANOVA Post hoc test followed by Duncan's t test and the mode of failure was studied via Scanning Electron Microscopy. Results: The mean bond strength of sand blasted specimens (36.74±1.67MPa) was higher when matched to other groups trailed by laser ablation (33.09±1.37MPa). With the exception of the control and acid etch group, a mixed mode of failure was disclosed on exploration with SEM. Conclusion: The bond strength of Direct Metal Laser Sintered Cobalt Chromium to ceramic pend on the surface roughness of the metal. The shear bond strength of sand blasted and laser ablated models were found to be uppermost and hence can be used as an approach in case of an efficacious digitized metal ceramic restoration.

OSC45 Dental Implant as a Treatment Option - An Awareness Survey among South Indian Patients about Implant

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Aim: To evaluate the dental patients expectation, level of knowledge, awareness towards dental implantology. Materials And Methodology: This Cross sectional study was conducted on a population attending outpatient department of Prosthodontics of Chettinad Dental College And Research Institute, Kancheepuram from 7-7 to 27-7-2016. Approved by the Chettinad Academy of Research and Educational Institutional Human Ethics Committee. Exclusion criteria-patients unwilling to sign the informed consent, mentally unstable and patient under psychiatric treatment. Inclusion criteria-Patient above 18 years of age willing to participate and sign the informed consent forms study population. N=50.Willing patients with written consent sign received a detailed explanation of the study by the principal investigator. Questionnaire contained a set of 13 questions with close-ended options and demographic details. The data were analyzed using SPSS software. Pearson Chi square test was used to analyze the data to evaluate the awareness of implants among South Indian patients. Result: Among the study population 41.2% knew about dental implant as a treatment option. High cost (25.5%) need for surgery (41.2%) and long treatment period (33.3%) were the main reason not to choose dental implant therapy. 39.2% believed that implant would last for life-long. 37.3% considered that implant require more care. 92.2% wished to have more information about the implant. Conclusion: The majority of the population had less knowledge about implant. They should be informed by organizing public awareness programs. Further studies are needed amongst a larger group of people.

OSC46 Knowledge, Attitude and Practices Regarding Oro-Facial Injuries and Mouth Guards among Parents in Kedah, Malaysia

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Background: Sporting activities contribute to nearly one-third of all dental injuries. The risk of children getting dental injuries during sports activities can be minimized by using a mouth guard and other oro-facial protective devices. The objectives of this study is to determine knowledge, attitude, and practices regarding oro-facial injuries and mouth guards among parents in Kedah, Malaysia and to create awareness and determine its use and effectiveness in preventing dental injuries. Material and Method: A cross sectional study using a validated self-completion questionnaire about the knowledge and awareness of common sports played, oro-facial injuries and use of mouth guard in the prevention of injuries, was given to 100 parents having children between age groups 1 to 15 yrs. who visited AIMST Dental Centre. The data was subjected to statistical analysis using chi square analysis. Results: The study population comprised of parents having 34 (%) male and 66 (%) female child. 68 % of the parents knew about mouth guards while 32 % were unaware. 90 % answered children did not use mouth guard, only 9% children used mouth guards during sports. The attitude and practice regarding the usage of mouth guards was found to be minimal. Conclusion: Parents acquired knowledge through media on effectiveness of mouth guards, only 9% recommended mandatory use. Lack of usage was due to reduced performance in sport due to improper fitting. Hence, dental organizations should have an advocacy role in promoting and developing such policies in the future.

OSC47 A Pilot Study on Oral Health Related Quality of Life and Patient Satisfaction with One Day Full Denture Prosthesis

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Purpose: The One Day Full Denture (1DFD) technique has been developed as an alternative to fabricate a set of complete dentures within a single visit. The aim of this cross-sectional study is to evaluate the oral health-related quality of life (OHR-QoL) and satisfaction level of patients rehabilitated with complete denture utilizing 1DFD technique. Materials and Methods: 31 completely edentulous patients were recruited and a set of complete dentures were fabricated using 1DFD technique. The oral health-related quality of life (OHR-QoL) was assessed using Oral Health Impact Profile for edentulous patients (OHIP-EDENT). Seven domains; functional limitation (D1), physical pain (D2), psychological discomfort (D3), physical disability (D4), psychological disability (D5), social disability (D6) and handicap (D7) were graded with 5-points Likert-type scale. Questions related to personal satisfaction of the edentulous patient with their dentures were also included. Both questionnaires were distributed to patients on one month review post denture delivery. Results: The OHIP-EDENT scored D2=0.90, D3=0.19, D4=0.64, D5=0.0, D6=0.0 and D7=0.13 indicating very good OHR-QoL for most domains except for functional limitation domain (D1) which scored 1.87. D1 domain have patients scored 'occasionally=2' (n:14) and 'always=4' (n:1) on subscale items resulting in a slightly higher score. However, patient satisfaction assessment showed very high rating with 100% (n:31) were satisfied with their maxillary denture and 93.5% (n:29) with mandibular denture. Conclusion: Complete dentures fabricated using the 1DFD technique showed positive impact on the oral health-related quality of life (OHR-QoL) and significant satisfaction of edentulous patients.

OSC48 Comparative Evaluation of Physical Properties of Nanoparticle Incorporated Addition Silicone with other Elastomeric Impression Materials

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Aim: To study the changes in physical properties of commercially available nanoparticle incorporated addition silicone and comparing the same with other commercially available addition silicone impression material and polyether. The hypothesis of the study is that the nanoparticle incorporated PVS material has better flow and wettability when compared to other commercially available PVS material and wettability equivalent to polyether elastomeric impression material. Materials And Methods: Polyether (group A) the most hydrophilic of other elastomers is used as a control material. Other groups include 2 commercially available addition silicone (GROUP B,C) and nanoparticles incorporated addition silicone (GROUP D). The Pre-set and Post-set wettability of each impression material is evaluated using saliva and a slurry of CaSO4 dihydrate respectively. The contact angle made by the saliva or CaSo4 drop with the respective impression material measured and evaluated using drop shape analysis of the frozen digital images. Also each impression material is used to make impression of a standard die. The die is dipped in saliva and impression is made using the above mentioned impression materials. The number of voids in the impression and stone cast poured from the impression are counted and evaluated. Results: The mean pre-set wettability of group A, B, C, D was 43.0400, 58.7960, 58.3940, 48.4350 and the mean post-set wettability of group A, B, C, D was 36.2870, 60.5320, 59.2110, 40.5640 . The mean number of voids on the impression for group A, B, C, D was 0.5,2.1,2.4,1.9 and The mean number of voids on the cast for group A, B, C, D was 0.3,1.2,1.6,0.8. Conclusion: Poly ether was found to have the best wettability, and the wettability of nanoparticle incorporated PVS was comparable to polyether and was better than other commercially available PVS material. The polyether material exhibited lesser voids. Comparable results were obtained with nanoparticle incorporated PVS and the other two exhibited more voids.

OSC49 A Quantitative Evaluation of Oral Frailty-Physical Frailty Relationship Model Based on Covariance Structure Analysis

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Aim: In this ultra-aged society with an increasing number of the elderly requiring care in Japan, the prevention of long-term nursing care is one of the crucial issues. The concept of "frailty", which is defined as losses of physiologic reserve that increase the risk of disability, has attracted steep increase of interest among researchers and clinicians. In Japan, the concept of "oral frailty", associated with the decline of oral function, has also been proposed. The aim of this study was to investigate the relationship between oral frailty and physical frailty by using covariance structure analysis in a cross-sectional study. Materials and Methods: A total of 225 subjects were enrolled after informed consent. For evaluating oral frailty, occlusal force and moisture of oral mucosa was measured. Grip strength and walking speed was measured for assessing physical frailty. For statistical analysis, decision tree analysis and covariance structure analysis were performed. The study was approved by the Ethics Committee of the Tokushima University Hospital (No. 2404). Results: Occlusal force was selected as the variable by the decision tree analysis in first layer for grip strength. Grip strength, occlusal force and moisture of oral mucosa were selected for walking speed. In a covariance structure analysis, a more appropriate model indicate that the causal relationship of oral frailty toward physical frailty was chosen compared to that by the inverse relationship between them. Conclusion: The causal relationship of oral frailty to physical frailty and significance of occlusal force for oral and physical frailty were suggested.

Original Study - Non-Competition

Session No.	Presenter	Title of Poster
OSNC1	Chun-Ying Yu	Relationship Between Applied Occlusal Load and Articulating Foil Mark Area
OSNC2	G.Lambodaran	A Comparative Evaluation of Bond Strength Between Two Different Veneering Materials to Zirconia Core -An In Vitro Study
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OSNC4	Mohd Najib bin Md Razi	The Influence of Different Barometric Pressure Conditions on the Bond Strength of Glass Fiber Post Cemented with Resin Cements
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OSNC1

Relationship Between Applied Occlusal Load and Articulating Foil Mark Area

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Aim: The study aims to determine if a relationship does exist between the articulating foil mark area and the occlusal load applied. Materials and Methods: A loading device repeatedly applied a compressive load at 0.2, 0.5, 1.0, 2.0, 3.0, 4.0 kgf to a pair of first molar teeth (D91S-200-MF, Nissin, Japan) with articulating paper (Bausch arti-foil BK-25, Germany) interposed. Five records were performed for each load. The resultant paper markings were photographed, and the mark areas were analyzed using ImageJ program (NIH, USA). To decrease the bias in determining the border of mark areas, automatic threshold was adopted and the area was calculated in ImageJ program. ANOVA and linear regression were used for statistical analysis. Results: The size of a mark, which can be observed at 0.2, 0.5, 1.0, 2.0, 3.0, 4.0 kgf, was 0.024±0.005, 0.688±0.014, 0.093±0.018, 0.104±0.025, 0.117±0.028 and 0.121±0.030 mm2, respectively. Although the size of the occlusal mark increased with the load significantly ($p<0.05$), the data indicated that the mark area increased non-linearly with increasing load. When the load increased, additional occlusal contacts were observed. Conclusion: Although the trend showed increasing mark area size with elevating load, the relationship was non-linear. Thus, clinically, when an operator performs an occlusal adjustment on a tooth, he should not assume that the size of paper markings can accurately describe the markings' occlusal contact force content.

OSNC2

A Comparative Evaluation of Bond Strength Between Two Different Veneering Materials to Zirconia Core -An in Vitro Study

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Aim: The aim of this study is to compare the shear bond strength between zirconia core veneered with feldspathic porcelain and zirconia core veneered with lithium disilicate. Materials and Methods: Twenty samples of zirconia blocks were fabricated using Schmitz-schulmeyer method (5mm length ,5.4mm width and 13mm height) and divided into two groups Group A(n=10) and Group B(n=10).Group A was then veneered (4mm length,5.4 mm width ,3mm height)with Feldspathic porcelain and Group B with Lithium disilicate. After veneering the samples were subjected to shear bond strength testing using the universal testing machine with load applied at the interface of veneering ceramic and zirconia at a speed of 5mm/ min till delamination occurred. The quantum of force at which the delamination occurred was then recorded and it was subjected to statistical analysis. Results: Higher mean shear bond strength was recorded for zirconia core veneered with lithium disilicate compared to zirconia veneered with feldspathic porcelain and the difference was found to be statistically significant. Conclusion: Within the limitations of the study it can be concluded that the zirconia core veneered with lithium disilicate exhibit a better bond strength than the zirconia veneered with feldspathic porcelain.

OSNC3

Effect of Direct Retainer Types of Dent-Maxillary Prosthesis in Maxillectomy Patients: An In Vitro Study

Effect of Direct Retainer Types of Dent-Maxillary Prosthesis in Maxillectomy Patients: An In Vitro Study

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Purpose: To investigate the effect of direct retainer types on the residual teeth of a dento-maxillary prosthesis in maxillectomy patients. Materials and methods: A simulated uni-lateral maxillectomy model and metal framework of Aramany Class I were fabricated. Strain gauges were put on the labial side of #11, the buccal side of #14, #15, #16, and #17. Firstly, stain values were measured while removing load from 1.0 N to 5.0 N were applied at the center of the framework at the condition of 0.9mm wired on #11. After direct retainer of #11 was changed to an O-ring attachment, stain values were measured. Finally, changed to a magnetic attachment, values were measured. We compared the changes of strain values on #11, #14, #15, #16 and #17 for each condition. The removing load was applied with a universal test machine, strain values were measured and analyzed with the data analysis software. Results: The framework with a magnetic attachment was dislodged when loaded with 4.0 N, the others were not dislodged within 5.0 N. At any situations, strain values of #14 were the maximum among abutment teeth of premolars and molars. The strain values of #11 with magnetic attachment and O-ring attachment have increased compared with wire clasp. Additionally, the strain value of #14 was decreased, #17 was increased. Conclusion: Within the limitation of this in vitro study, the first premolar would be most stressed under the dislodgement in case of metal framework of Aramany Class I.

OSNC4

The Influence of Different Barometric Pressure Conditions on Bond Strength of Glass Fiber Post Cemented with Resin Cements

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The retention of indirect dental restoration under the challenge of increased barometric pressure as faced by divers is unpredictable. Resin cement has been used to cement glass fiber post, however the effectiveness of self-adhesive and self-etch resin cement on retention of glass fiber post under different barometric pressure is unknown. Aim: The aim of this study is to evaluate the mean pull out bond strength of glass fiber post under normal and hyperbaric pressure conditions after being cemented with two different resin cement, namely, RelyX™ Unicem (3M ESPE) and RelyX™ Ultimate (3M ESPE). Materials and Methods: A total of 40 extracted, single-rooted mandibular premolars were endodontically treated. They were randomly divided into two groups according to the cements use. The pull-out bond strength of glass fiber posts in endodontically teeth were analysed. Results: At normal atmospheric pressure, the mean value of pull-out bond strength of self-etch resin cement was 299.7±77.9 N and the self-adhesive resin cement was 148.5±35.0 N. Whereas, at hyperbaric pressure, the mean value of the pull-out bond strength of self-etch resin cement was 275.0±73.4 N and self-adhesive resin cement was 245.8±46.3 N. Conclusion: Conclusion, self-etch resin cement had higher bond strengths compared self-adhesive resin cement. The bond strength of glass fiber posts were also not affected by different barometric pressure conditions for self-etch resin cement. However, for self-adhesive cement, the bond strength of glass fiber post was influenced by different barometric pressure conditions.

OSNC5

Malaysian's General Dental Practitioner (GDP) Opinion on Mandatory Requirement of Continuing Professional Development (CPD)

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Aim: This study examined the opinion of general dental practitioner (GDP) towards the new mandatory continuing professional development (CPD) requirement imposed by the Malaysian Dental Council (MDC) and to identify the current CPD practices of Malaysian's GDP. Materials and Methods: A paper-based survey questionnaire was distributed to 229 participants that attended CPD programmes at Faculty of Dentistry, Universiti Teknologi MARA (UiTM) from April 2017 to November 2017. Results: The overall respond rate was 49.8% (n=119). 85.9% of respondents were aware on MDC requirement regarding CPD whereas 79.8% of respondents were confident that they would achieve the minimum CPD requirement at the current time. Although 93% of respondents agreed on the importance of CPD, 52.6% of them disagreed that they should be removed from the register if they did not complete a portfolio of evidence in documenting their CPD activities. Conclusion: Malaysian's GDP acknowledged the importance of undertaking CPD. The introduction of a mandatory CPD system will provide the motivation among GDP to engage in CPD programme in future.

OSNC6

Precision of the Milled Full-Arch Framework Fabricated Using Pre-Sintered Soft Alloy: A Pilot Study

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Purpose: This study aimed to evaluate the marginal discrepancy of full-arch frameworks in implant-supported prostheses fabricated using pre-sintered soft alloy (PSA). Materials and Methods: Full-arch metal frameworks were fabricated on the edentulous implant model using casting alloy (CA), fully-sintered hard alloy (FHA), and PSA (n = 4 in each group). To evaluate the misfit of the framework to the abutments, the absolute marginal discrepancy (AMD) values of the frameworks were measured in cross-sectional images that had been drawn as part of the triple-scan protocol. The AMD values were compared among the tested alloy groups using the Kruskal-Wallis test, with a post hoc Mann-Whitney U test (_α _= .05). Results: The FHA and PSA groups showed lower marginal discrepancies than the CA group (P < .001). However, the FHA group did not differ significantly from the PSA group. Conclusion: Soft alloy milling is comparable to hard alloy milling, and it is more precise than casting in terms of the marginal fit of implant-supported, full-arch prostheses.

OSNC7

Flexural Strength of CAD/CAM Hybrid Blocks after 2 Year Aging in Water at 37°

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Aim: Hybrid composite blocks for CAD/CAM are known as useful materials clinically. However, hybrid composite blocks have been shown to be easily degraded as compared with ceramic blocks. The aim of this study was to evaluate the flexural strength of CAD/CAM blocks after 2 year immersion in water at 37°C. Materials and Methods: Nine materials were selected. Eight hybrid blocks were Block HC (Shofu), Cerasmart (GC), Estelite Block (Tokuyama Dental), Katana Avencia block (Kuraray), KZR-CAD (Yamakin), Lava Ultimate (3M ESPE), Mazic Duro (Vericom), Vita Enamic (Vita). Ceramic block was VitaBlocs MarkII (Vita) used for control. Disk typed blocks were stored in 37°C water for 2 years and water was changed every week. After aging treatment, 1.2 mm-thick, 4.0 mm-width polished specimens (n=10) were prepared for three-point bending test. Bending test was conducted with a cross-head speed of 1 mm/min (Instron). Baseline flexural strength was measured two years ago. Results: In hybrid blocks, flexural strength after 2 years aging was significantly decreased and there was significant difference between hybrid blocks and the ceramic block. Cerasmart and Mazic Duro showed the high flexural strength after 2 year aging treatment (137.63, 130.34 MPa) and the lower reduction rate (39.60, 35.81%). Ceramic block showed the lowest reduction rate by 2 year aging treatment (21.19%). Conclusion: These results suggested that flexural strength significantly decreased (36-53%, depending on the material) after immersion of CAD/CAM hybrid blocks in water for 2 years.

OSNC8 Ten-Year Survival of Immediate-Loading Implants in Fully Edentulous Maxilla in the Asian Population: A Multilevel Analysis

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Aim: The aim of this study was to evaluate the long-term clinical results of immediate loading of completely edentulous maxilla and determined the outcome predictors in the Asian population. Materials and Methods: We retrospectively studied 517 implants in 116 patients (47 women, 69 men; mean age 58.4 years) who received immediate-loading implant treatment in fully edentulous maxilla. Kaplan-Meier survival analyses, log-rank tests, and multilevel mixed-effects parametric survival analysis were used for statistical analyses. Results: 85 patients were treated with four implants, 10 patients with five implants, 20 patients with six implants and one patient with seven implants. Regarding implants length and diameter, the majority of implants in present study were moderate or long length (96.1% implants were 10-18mm) and regular platform (94.6% implants were 3.75-4.3mm). Our results demonstrated that immediate-loading implant treatment for complete edentulous maxilla showed adequate clinical result even in long-term prognosis in Asian population (10-year cumulative implant survival rate was 94.8%). Log-rank tests showed that cumulative implant survival rate was significantly higher in female than male (p=0.007). Furthermore, multilevel mixed-effects parametric survival analysis revealed that sex, implant length and region of implant placement might be significant outcome predictors for immediate loading implants in the fully edentulous maxilla. Conclusion: Immediate-loading implant treatment of completely edentulous maxilla has an acceptable 10-year cumulative implant survival rate in the Asian population and we should pay consideration to sex, implant length and region of implant placement in the immediate- loading implant treatment in fully edentulous maxilla.

OSNC9 Patient's Satisfaction and Occlusal Parameters of Complete Denture Fabricated Using CAD/CAM Technology

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Purpose: Complete dentures fabricated using CAD/CAM technology has improved accuracy This cross over study evaluated patient satisfaction and occlusal factors provided with complete dentures fabricated using the CAD/CAM technology and with conventional processing. Materials and Methods: Seven edentulous patients (mean age: 63±17 years, gender: 4 males, 3 females) requiring new complete denture participated in this study. The CAD/CAM complete denture was designed and fabricated using DENTCA system (DENTCA, USA) system. Two set of maxillary and mandibular complete dentures, CAD/CAM and conventional fabrications, were delivered to each patient and clinical assessment performed after each phase. Occlusal forces and occlusal contact areas were measured as evaluation. Patient satisfaction was assessed using questionaires on 100 mm visual analogue scale (VAS). Results: Conventional (159.6±2.8 N) was showed higher occlusal forces and occlusal contact areas than CAD/CAM (78.2±8.2 N) before adjustment ($p < 0.05$). And also, Conventional (2.8±2.4 mm2) was showed lager occlusal contact areas than CAD/CAM (1.2±1.2 mm2) ($p<0.05$). In mean score of patient satisfaction using VAS, CAD/CAM (82.4±9.2) was significantly higher than Conventional (61.2±11.2) in Pronunciation ($p<0.05$). For Occlusion, Stability, Aesthetic, Comfort and Total excluding mastication, no significant difference was observed. Conclusions: CAD/CAM denture could be provided complete denture of similar quality to conventional process and decreased number of patient's visits.

OSNC10 Clasp Fabrication Using One-Process Molding by Repeated Laser Sintering and High-Speed Milling

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Introduction: The surface of a framework manufactured by laser sintering is considerably rougher than the one manufactured by milling. To resolve these problems, a single machine platform that integrates repeated laser sintering and high-speed milling for one-process molding (hybrid) has been developed. Aim: This study was to evaluate the Akers clasp assembly prepared with Co-Cr alloy particles by hybrid methods as compared to the conventional casting method. Materials and Methods: After the tooth die was scanned, an Akers clasps were designed using CAD and fabricated using hybrid methods using Co-Cr powder by two build angles (45°[CAM45] and 90°[CAM90]). As controls, cast Akers clasp was prepared using a Co-Cr alloy. After a nondestructive inspection by taking radiographs, the surface roughness of the rest region, gap distances between clasp and tooth die, initial retentive forces, and changes of retentive forces up to 10,000 insertion/removal cycles were measured. Results: CAM clasps smoother than those of cast clasps. The gap distances of the CAM clasps were significantly greater than those of the cast clasps. Initial retentive forces of CAM45 was the significantly greater than that of CAM90. The retentive forces of cast clasps indicated a remarkable decrease from the initial retentive forces to 2,000 insertion/removal cycles. In contrast, the CAM clasps demonstrated a constant or slight decrease from 1,000 up to 10,000 cycles. Conclusions: These results suggest that the CAM clasp made by repeated laser sintering and high-speed milling can be used effectively as an RPD component.

OSNC11 Assessment of the Level of Gum Lines of Filipino: A Basis for Anterior Fixed Partial Denture Material Selection

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This study determined the average level of gum line of Filipinos and corresponding fixed partial denture material that could satisfy esthetic requirement. Materials and Methods: Descriptive method utilizing both observation and survey were conducted. Observation of participants at fullest smile to determine the level of gum lines was performed. The level of gum lines were assessed below, above and in level with the intercommisure line. Verbal query regarding age of participants was also done. The average level of gum line was used as a basis for appropriating material for anterior fixed partial denture. Results: There were two thousand fifty one participants, one thousand five hundred sixty six (76.35%) were female and four hundred eighty five (23.65%) were male with an age range of 18 to 37 years. Assessment of both female and male at fullest smile revealed that one thousand five hundred sixty two (76.16%) have gum line below the intercommisure line, three hundred two (14.72%) have gum line in level with the intercommisure line and one hundred eighty seven (9.12%) have gum line above the intercommisure line. Discussion: With wider array of materials to choose from, clinical judgment plays an important role in providing the best restoration for varying clinical conditions. Understanding that the level of gum line have a significant effect on esthetics, the use of metal ceramic for anterior fixed partial denture despite of it time tested durability should be limited to those with gum line located above the intercommisure line. Metal ceramics although tooth colored had an opaque layer along cervical area, impaired translucency and gray shadow shade effect could causes esthetic problem. For those with gum line located below and in level with the intercommisure line an esthetically superior all ceramics either pressed or fully sintered is best. Conclusion: With three hundred two (14.72%) of participants having gum lines in level with the intercommisure line and one thousand five hundred sixty two (76.16%) below the intercommisure line showing cervical third of anterior prosthesis at fullest smile, all ceramics instead of metal ceramics is the most appropriate material for anterior fixed partial denture of Filipinos. For the remaining one hundred eighty seven (9.12%) whose gum lines were above the intercommisure line, metal ceramic and all ceramics may be used without compromising esthetics.

OSNC12 Influence of Abutment Material on Stress Distribution Around Maxillary Anterior Implants

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Aim: The purpose of this study was to investigate the combined influence of alveolar bone density, abutment material and occlusal forces on stress distribution around maxillary anterior implants in order to reduce the marginal bone loss and facial marginal recession for an optimal esthetic outcome. Materials and Methods: A 3D Finite Element Model of a maxillary anterior single implant was generated from the CT image of the patient. Nine comparative groups were formed in D2 and D3 bone respectively. Three different abutment materials titanium, zirconia and PEEK (Poly-Ether-Ether Ketone) were used. External loads of 100N, 175N and 250N were applied in the vertical and oblique direction and the stress values were obtained from the labial aspect of the crestal bone. Results: The highest Von Mises stress values were seen in the D3 bone when compared to the D2 bone. On vertical and oblique load of 100N, 175N and 250 N there was generalized higher stress values when PEEK was used as an abutment material. In all the groups, the stress values were greater on application of oblique load compared to vertical load and the stress increased for every increase of 75N. Conclusion: The result of our study suggests that titanium and zirconia distribute the stresses in a more homogenous manner compared to the PEEK abutment.

OSNC13 The 2-Dimensional Effects of Salvadora Persica (Miswak) Mechanical Brushing on Denture Base Material

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Introduction: Salvadora Persica (Miswak) was proven to have multiple benefits to oral tissues. The antimicrobial effects of miswak towards intraoral microbes can reduce the prevalence of denture induced stomatitis when used by denture wearers. Dentures need to be cleaned to maintain its aesthetics and prevent candida growth. However, inappropriate selection of denture cleaning aids might compromise the properties of the poly methyl methacrylate (PMMA) denture base material and its longevity. Therefore, the aim of this study is to assess the 2-dimensional mechanical brushing effect of miswak, toothbrush and toothbrush with toothpaste on PMMA denture base material. Methods: Nine PMMA samples sized 2x2x0.5cm were prepared by using the standard denture base preparation protocols. All samples were sent for scanning electron microscopy (SEM) as baseline record. Toothbrushing simulator was used to simulate mechanical brushing of the PMMA samples and they were brushed for 17,800 and 53,400 strokes to simulate one and three years of mechanical brushing using miswak, soft toothbrush and soft toothbrush with toothpaste. The samples were sent for SEM images after the brushing. Results: Images of the SEM micrographs were interpreted descriptively. The brushed samples demonstrated series of 2-dimensional grooves in a long axis of the specimen with the most prominent effect was noted on sample brushed with toothbrush and toothpaste and the least grooves on sample brushed using Miswak. Conclusion: After three years of mechanical brushing, Miswak presented with the least 2-dimensional abrasive effect on PMMA denture base material compared to the other cleaning methods.

OSNC14 Caries Preventive Interventions in Community-Dwelling Elders: A Systematic Review

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Background: As the human lifespan increases, the elders are known to retain their teeth for longer. Therefore, the need to uncover effective ways of preventing caries among this age group is relevant. Aim: To conduct a systematic review of identifying the clinical efficacy of caries preventive interventions in community-dwelling elders. Materials and Methods: A search was conducted using four databases: Cochrane, MEDLINE, EMBASE and Web of Science using the keywords (caries OR demineralization) AND prevention AND (adult OR aged). The titles and abstracts were initially screened for the use of caries prevention interventions. Studies were excluded based on the predetermined criteria. The full texts of the remaining studies were then evaluated. Results: Of 6952 articles identified from the search, fifty full texts were evaluated. Finally, ten studies were analyzed. One study found rinsing with 0.05% of NaF twice daily resulted in lower coronal caries increment. Another study reported the use of 1,100 ppm of NaF dentifrice twice daily showed lower percentage of coronal and root caries. A reduction of root caries was observed from using 5,000 ppm fluoridated toothpaste twice daily, annual professional 38% SDF solution application, six-monthly professional cleaning and APF gel application. The use of 0.12% CHX rinse and xylitol chewing gum did not show reduction of caries incidence. Conclusion: Toothbrushing with 5,000 ppm of NaF dentifrice, rinsing with 0.05% NaF, professional application of 38% SDF solution and APF gel may be effective at preventing caries among the elders.

OSNC15 The Effectiveness of Nigella Sativa in Elimination of Candida Albicans Denture Biofilms - A Pilot Study

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Aim: Nigella sativa, one of traditional herbs widely used as supplement, traditional medicine and personal hygiene products. Recently, natural based herbs have become an alternative material used for denture cleansing, thus this study is conducted to identify the efficacy of Nigella sativa on elimination of Candida albicans biofilm from denture base polymer. Materials and Methods: Thirty sterilized disc shape (10 x 2) mm heat cured denture base polymers (PMMA) were fabricated and divided into three groups (n=10): Group A was immersed in distilled water, Group B was coated within Candida albicans suspension for 24 hours, then Group C had the same procedure as group B, followed by immersion with Nigella sativa seeds extract for 1 hour. Results: The One-way ANOVA test has revealed that mean number of colony forming unit in Group C was significantly reduced (1.20±10-1) as compared to Group B (5.24±10-1), $p < 0.01$. Following 24hour immersion in candida suspension, the number of colony forming was increased in group B when compare to Group A, with mean of CFU values $p<0.01$. However, the results showed there was no significant different between the Group A and Group C, with $p>0.01$. Further analysis comparing the mean growth scores of each group using post-hoc Dunnet T3 test shows the same results. Conclusions: The result of this study had presented that Nigella sativa is effective in reducing Candida albicans biofilm colonization on denture base polymer.

OSNC16 Investigation of Swallowing Ability Using the Eating Assessment Tool 10 (EAT-10) in Maxillectomy Patients

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Introduction: Maxillectomy for oral tumours frequently suffer from various functional disorders, which markedly decreases their quality of life. Dysphagia is especially one of the most serious problems of maxillectomy, potentially causing disorders such as dehydration, malnutrition and pneumonia that can require long-term care. In previous study, we objectively evaluated swallowing ability using swallowing sounds in maxillectomy patients. On the other hand, it is necessary to subjectively evaluate swallowing ability for improving their QOL. The Eat-10 is designed for self-administered and easily-scored survey to evaluate swallowing function, that have high discriminant ability to detect dysphagia. The aim of this study was to evaluate self-ratings of swallowing function in maxillectomy patients using the Eat-10 and investigate the related factor of that result. Materials and Methods: This study was conducted at the Maxillofacial Prosthetic Clinic, Tokyo Medical and Dental University Hospital, Japan. 50 maxillectomy patients were recruited for this study. Swallowing ability was evaluated using the Eat-10. The score above 3 is abnormal and indicates the presence of swallowing difficulties. Gathered data were statistically analyzed to investigate how a number of factors, age, sex, period after operation, radiation therapy and soft palate resection affect the Eat-10 score. Result: In maxillectomy patients, the Eat-10 score was significantly difference between patients who had undergone soft palate resection and who hadn't ($p<0.05$). However, the other factors, age, sex and period after operation didn't affect the Eat-10 score. Conclusion: This result suggest that soft palate resection could affect swallowing ability in maxillectomy patients.

OSNC17 Mastication Promotes Expression of Some Memory-Related Genes in the Cerebral Cortex

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Purpose: It has been reported that mastication promotes function of learning and memory via the trigeminal nerve and blood vessels. BDNF promotes synapse connections between neurons, while CREB is a transcription factor for certain proteins related to memory including BDNF. Apo E is an apolipoprotein that plays a role in the transportation of cholesterol, and it is known that functional disorder of Apo E affects cognitive function. We examined whether certain genes that are responsible for learning and memory were more strongly expressed after mastication. Materials and Methods: After starvation for 24 hours, 20 Wister rats were divided into two groups. One group was given 0.2 cal/kg of solid food (solid feed group) that rats should masticate because of hard pellet and the other was given 0.2 cal/kg of liquid food (liquid feed group) that rats only swallowed without mastication. The solid and 1iquid foods contained identical nutrition. After euthanasia, the whole cerebral cortex was removed, and mRNA was extracted. Relative expression levels of BDNF, APO E, and CREB in the two groups were measured by real time RT-PCR. Results: Expression levels of BDNF and CREB were higher in the solid feed group than in the liquid feed group. Expression of APO E was comparable in the two groups. Conclusion: Our results suggest that mastication of solid food promotes expression of BDNF and CREB. Mastication may be useful for learning and memory via a mechanism involving BDNF and CREB.

OSNC18 The Effect of Bite Raising on Swallowing Sounds

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Aim: Determining the appropriate occlusal vertical dimension is an important issue in the preparation of complete dentures. The articulatory organs of the lower jaw, tongue, and lips have been well studied from both acoustic and functional perspectives. As these articulatory organs are also involved in swallowing movements, an assessment of swallowing movements would be useful for determining the appropriate occlusal vertical dimension. However, few studies have addressed the question of swallowing movements and determination of the occlusal vertical dimension in the preparation of complete dentures. Here we report a basic study using swallowing sounds to investigate the association between swallowing movements and the occlusal vertical dimension in normal dentulous individuals, as a preliminary step before its application to complete-denture wearers. Materials and methods: An experimental bite-raising plate was used in the investigation, and swallowing sounds while subjects wore the plate were recorded and analyzed. Results and conclusion: A change in swallowing sounds was evident when the plate was worn. During swallowing, the organs involved in the swallowing action move in a coordinated fashion. Previous studies have found that increasing the occlusal vertical dimension increases the maximum tongue pressure at the posterior palate. Changes in swallowing movements due to changes in tongue movements may have affected swallowing sounds. Our results showed that increasing the occlusal vertical dimension affected swallowing sounds. This suggested that swallowing sound analysis may be useful in determining the appropriate occlusal vertical dimension in the preparation of complete dentures.

OSNC19 Influence of Different Surface Treatments on Zirconia/Resin Shear Bond Strength Using One-Bottle Universal Adhesive

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Aims: This study was designed to evaluate the effect of different surface treatments on the shear bond strength (SBS) of zirconia to resin using a commercially available one-bottle universal adhesive. Materials and Methods: 60 zirconia discs of 4mm height x 4mm diameter were randomly divided into 6 groups (n = 10) according to different surface treatments; blank control, airborne-particle-abrasion; glazing, with and without thermal cycling fatigue test (temperature from 5° to 55 ° for 10000 cycles). After received the different surface treatment and thermal cycling, the zirconia discs were bonded to bovine enamel surfaces using one-bottle universal adhesive. All specimens were then embedded in acrylic resin prior subjected to shear bond strength test using a universal testing machine with a crosshead speed of 0.5 mm/min. Results: Statistical analysis were conducted by using one-way analysis of variance and multiple-comparison least significant difference tests ($\alpha = 0.05$). Airborne-particle-abrasion group produced higher bond strengths than other treatments ($p < 0.05$) and showed no significant decrease after thermal cycling test. The SBS of control group and glazing group showed significant decreased after the thermal cycling test. Conclusion: After airborne-particle-abrasion treatment, zirconia/resin SBS was enhanced together with one-bottle universal adhesive.

OSNC20 Repetitive Occlusal Interferences Facilitate Masseter Hyperalgesia in Rats

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Aim: To investigate the effect of orofacial pain history on masticatory muscle pain (MMP) induced with repetitive occlusal interferences (OIs) in rats. Materials and methods: Twenty Sprague-Dawley male rats were randomly assigned into four groups with the approval of ethic committee. The 0.4 mm-thick metal crown was bonded on the upper first molar of rat as the first OI and removed after 2 days. At 7 days after the head withdrawal mechanical threshold (HWMT) recovering to baseline, the same crown was bonded again as the second OI and removed after 2 or 4 days. Operations were simulated without bonding any appliance in the control group. HWMT of bilateral masseters were measured with von-Frey anesthesiometer while morphological changes of astrocyte and microglia in trigeminal spinal nucleus (Vsp) were observed using immunofluorescent staining before and after the first and second OIs in each group. Results: The recovery of masseter HWMT needed 8 days or 10 days respectively after removing the first OI or the 2-day second OI. The masseter HWMT required 19 days or 12 days respectively to recover with or without the first OI after removing the 4-day second OI. At 19 days after removing the 4-day second OI, the astrocyte showed mild activation regardless with or without the first OI, while the microglia showed mild activation only with the first OI. Conclusion: The repetitive occlusal interferences facilitated masseter hyperalgesia by postponing the relief of masseter hyperalgesia and prolonging microglia activation in Vsp.

OSNC21 Evaluation of the Effectiveness of Bone Scintigraphy in Bone-Implant Interface Through Case Studies

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Aim: The foundation of implant success is osseointegration between living bone and the dental implant. Since it is a dynamic one and the current methods of evaluation depict a static picture, the use of nuclear medicine has been suggested by many authors. Materials and Methods: A total of 40 patients, both male and female between the ages of 20 and 50 were selected for the study. They were divided randomly into three groups. Group A consisted of 10 patients in each of whom 2 implants were placed in the molar region bilaterally; one implant was immediately loaded and the other was conventionally loaded. Group B consisted of 10 patients in each of whom 2 implants were placed in the molar region bilaterally; one implant was placed under normal torque and the other under high torque. Group C consisted of 20 patients in each of whom 1 implant was placed in the molar region; in 10 patients it was placed with simvastatin and the rest with a placebo. Each of the patients was subjected to bone scintigraphy scans at day 30 and day 90 after the placement of implants to evaluate the osteoblastic activity. Result: When scintigraphy scans were performed, the osteoblastic activity was found to be significantly better in the immediately loaded implants, the implants placed with higher torque and the implants placed with simvastatin. Conclusion: Implants placed under immediate loading, with a high torque, and with simvastatin could provide better and faster osseointegration. Bone scintigraphy proved to be a reliable non-invasive method to evaluate osteoblastic activity, which is a representation of the process of osseointegration.

OSNC22 The Relationship Between Sarcopenia and Occlusion in Community-Dwelling Elderly People

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Purpose: To investigate whether the development of sarcopenia decreases number of remaining teeth and/or occlusal force. Materials and Methods: Subjects were 227 community-dwelling elderly people (aged 65 and older). We assessed number of remaining teeth, occlusal force and sarcopenia probability. Occlusal force was measured with Occlusal Force-Meter GM10 if the subject wore removable dentures. Probability of sarcopenia was determined using a validated method that includes three variables: age, grip strength and lower leg circumference. Subjects were divided into four groups by sarcopenia probability: section 1: ≤25%, section 2: 26-50%, section 3: 51-75%, section 4: 76%≤. All data were analyzed by Kruskal-Wallis test and Mann-Whitney U test. Results: The four groups' average numbers of remaining teeth were 18 (section 1), 13 (section 2), 10 (section 3) and 8 (section 4). The groups' average occlusal force values were 299N (section 1), 210N (section 2), 148N (section 3), and 126N (section 4). This shows a significant difference between section 1 and section 4 ($p<0.01$) and between section 1 and section 3 ($p=0.01$) in both number of remaining teeth and occlusal force. Conclusion: Our results suggest that oral function affects sarcopenia. Elderly people with low numbers of remaining teeth and low occlusal force are more likely to have a high probability of sarcopenia. This is probably because maintenance of teeth and prosthodontic appliances are important for the prevention of sarcopenia.

OSNC23 Evaluation of Denture Base Adaptation by Conventional Heat-Cured PMMA Method and Digital Method

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Objective: To compare the denture base adaptation of conventionally manufactured acrylic, 3D printing and CAD/CAM techniques for fabricating complete dentures to determine which process produces the most accurate adaptation. Materials and Methods: Two edentulous maxillary and mandibular models were fabricated from cobalt-chrome alloy. The models were scanned and designed with a 2mm thickness denture base. Denture bases were fabricated by four different manufacturing techniques and materials: CAD/CAM milled, 3D printing, injection molding and Pack & Press. Denture base adaptation was assessed by conventional and digital method. In conventional way, adaptation was assessed by measuring the thickness of silicone impression material between the base and the master model. In digital way, adaptation was assessed by superimposition of the scanning data. Results: According to conventional method at maxilla, no matter which technique was used, the bilateral tuberosities showed the minimum thickness and the post dam showed maximum thickness. The CAD/CAM technique had the most accurate adaptation. The 3D printing group showed larger gap than conventional group. At mandible, 3D printing group showed the best adaptation, followed by CAD/CAM group. Heat cured resin method had the least adapted result among all techniques. According to digital superimposition, the overall results showed there was no significant difference in the trueness of the intaglio surfaces between CAD/CAM, injection molding and pack & press groups. 3D printing showed the lowest trueness among all groups. Conclusions: The CAD/CAM and conventional heat cured fabrication process were more accurate denture fabrication techniques when compared with 3D printing technique.

OSNC24 Effect of Activation Modes on Compressive Strength and Diametral Tensile Strength of Dual Cured Self-Adhesive Resin Cements

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Aim: The purpose of this study was to compare the compressive strength and diametral tensile strength of several dual-cured self-adhesive resin cements by different activation modes and testing time. Material & Method: Six commercially available dual-cured self-adhesive resin cements; Rely-X U200, Clearfill SA Luting, G-CEM LinkAce, Maxcem Elite, PermaCem 2.0 and Zirconite, were included in the study. Cylindrical specimens were prepared for compressive strength test (Ø 4 x 6 mm) and for diametral tensile strength test (Ø 6 x 3 mm) according to ISO standard. Each cement divided into six groups in combination with two activation modes (self-cure in water at 37°c, 40 seconds light-cure) and three testing time (immediately, 24 hours after curing, after 2000 thermal cycles). Both tests were conducted using an universal testing machine according to ISO standard. The data were statistically analyzed using t-test, one-way ANOVA, two-way ANOVA and the multiple comparison Scheff's test ($P<.05$). Result: Compressive strengths and diametral tensile strengths of dual-cured self-adhesive resin cements showed variable results from 142.94 MPa to 298.14 MPa and from 22.76 MPa to 44.48 MPa respectively. In comparison between testing times, the compressive strength and diametral tensile strength after 24 hours were higher than immediate testing. In comparison between cements, G-CEM showed the highest values compared to other cements except diametral tensile strength immediately. In comparison between activation modes, Rely-X U200, PermaCem 2.0 and Zirconite had higher values in light-curing than self-curing activation mode, while other cements revealed no statistically significant differences according to activation modes. Conclusion: Self-adhesive resin cements revealed differences in compressive strength and diametral tensile strength according to their composition, testing time, activation mode. All cements demonstrated clinically available strength values. These results may be used as the guide line for selecting of resin cements.

OSNC25 Flexural Strength of Polymethyl Methacrylate Provisional Restoration Reinforced with Bamboo Fibres: An In Vitro Study

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Aim: To evaluate the effect on flexural strength of provisional fixed partial dentures (FPD) fabricated by autopolymerising polymethyl methacrylate (PMMA) reinforced with variable quantity of bamboo fibres. Materials and methods: Forty (10 per group) provisional fixed partial dentures using autopolymerising polymethyl methacrylate resin were fabricated using a die and divided in four groups containing: Unreinforced PMMA, PMMA reinforced with 3, 6 and 9 w/w % of bamboo fibre placed at the occlusal third of the FPD. The flexural strength was determined by three-point bend test. Statistical analysis was done by one-way ANOVA followed by Tukey HSD at significance of $p<0.5$. Results: The reinforced samples showed significantly higher flexural strength in comparison to the unreinforced samples. The flexural strength increased with an increase in the quantity of bamboo fibres. Conclusion: Polymethyl methacrylate provisional FPD reinforced with bamboo fibres revealed significant improvement in flexural strength.

OSNC26 The Influence of Angulation of Implants for the Implant Supported Overdentures

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Aims: To analyze the influence of implants and attachments with 5 and 10 degrees of inclination on the retention and longevity of implant retained overdentures. Materials and Method: 10 implants and 50 attachments are selected and divided into five Groups. Group 1: Two implants and attachments parallel to each other. Group 2: Implants inclined at an angle of 5 degrees and attachments without any inclination. Group 3: Implants and attachments inclined at an angle of 5 degrees. Group 4: Implants inclined at an angle of 10 degrees and attachment without any inclination. Group 5: Implants and attachments inclined at an angle of 10 degree. All attachments and implants were tested for inclination on the retention on UTM. The retention measured 5 times for each Group and the registered data was analyzed by one-way ANOVA and T-test. Result: There was no significant difference among Group 1, 3, 4 and However there was a difference between the control Group, Group 1 and the other Groups. Conclusion: 5 or 10 degrees does not have any negative effect on the prosthesis longevity.

Case Report - Competition

Session No.	Presenter	Title of Poster
CRC1 8.30 - 8.45	B. Devi Parameswari	Bridging the Gap with Magnets-Maxillofacial Prosthesis -A Case Report
CRC2 8.45 - 9.00	Chihargo	Iris Positioning Technique by Using Optical Vernier Interpupillary Distance Ruler on Custom Ocular Prosthesis
CRC3 9.00 - 9.15	Smriti Narayan Thakur	Drill Through the Tooth Technique for Lower Molar Implant Placement – A Case Report
CRC4 9.15 - 9.30	Divya Kumari	Liquid Supported Denture (A Case Report)
CRC5 9.30 - 9.45	Shabab Ahmed Khan	Biomechanics of Implant in Prosthetic Dentistry
CRC6 9.45 - 10.00	Kumar Lekhak Ghosh	Uses of Lasers in Prosthodontics
CRC7 10.00 - 10.15	Ou Shiu-Fong	Soft Tissue Moulding Technique in Immediate Implant Placement and Provisionalization
CRC8 10.15 - 10.30	Hiroko Tani	The 28 Years Observation of A Maxillectomy Patient: A Case Report
CRC9 10.30 - 10.45	Gowtham Raj	Designing and Fabrication of Highly Precisive Robotic Arm with 3D Printing Technology for a Congenitally Missing Patient- A Clinical Case

CRC10 10.45 - 11.00	Pei-Ni Hsieh	Sectional Impression for a Total Maxillectomy Patient Reconstructed with Free Flap: A Clinical Report.
CRC11 11.00 - 11.15	Agrippina Maria Winardi	Management of Trigeminal Neuralgia in a Patient after Lower Tooth Extraction: A Case Report
CRC12 8.30 - 8.45	Semanthi Andarawewa	Prosthetic Rehabilitation of a Patient with Surgically Acquired Valopharyngeal Insufficiency and Partial Glossectomy
CRC13 8.45 - 9.00	Kevin Christopher Kawilarang	Modified Telescopic Overdenture as an Alternative for Hyperactive Gag Reflex Patient
CRC14 9.00 - 9.15	Siva Prakash Dhanaraj	Management of Implant induced Neuropathy with Sticky Bone & PRF -A Case Report
CRC15 9.15 - 9.30	Sayfaldeen Kashmoola	Management of Snoring with Novel Mandibular Advancement Device in a Bruxing Patient: A Case Report
CRC16 9.30 - 9.45	Lim Ee Lian	Different Approaches to Morse Taper Abutment Fracture
CRC17 9.45 - 10.00	Wong Jin Lin	Full Mouth Rehabilitation Utilising the Shortened Dental Arch Concept
CRC18 10.00 - 10.15	Md Minhaz Ul Islam Nizami	Prosthetic Rehabilitation of a Microtia Patient: A Challenging Wax Sculpture Technique.
CRC19 10.15 - 10.30	Eleena Binti Mohd Yusof	Management of Generalised Non-carious Tooth Surface Loss.
CRC20 10.30 - 10.45	Hong-Taek Jung	Restoration with Implant-Supported Maxillary Overdenture and Implant-Assisted Mandibular RPD Using Double-Scanning Method and Rapid-Prototyping Technique
CRC21 10.45 - 11.00	Dinesh N	Management of Complications Associated with Ball Abutment in a Maxillary Over Denture - A Case Report
CRC22 11.00 - 11.15	Melati Mahmud	Multidisciplinary Management of Anterior Tooth Wear
CRC23 11.15 - 11.30	Aini Hayati bt Abdul Rahim	Full Mouth Rehabilitation in a Patient with Severe Generalized Tooth Wear as a Result of Prolonged Plant-Based Diet

CRC1

Bridging the Gap with Magnets-Maxillofacial Prosthesis - A Case Report

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Introduction: Midfacial defects are defined as defects in the middle third of the face in horizontal plane that communicate with intraoral maxillary defects. Rehabilitation of these defects requires multidisciplinary approach for better success starting from the treatment planning, surgical procedures to prosthetic management. Maxillary defects can be rehabilitated either by plastic surgery or by obturator prosthesis. This article gives an in depth discussion of a case of maxillary defect involving orbit and the treatment carried out towards prosthetic rehabilitation. Case Description: A 50-year-old male patient reported to the department with surgically induced orbital and maxillary defect. On examination, it revealed missing right orbit and right maxilla and there existed a communication across the defects. Treatment was planned to fabricate orbital prosthesis and maxillary obturator separately and retaining both with opposite poles of magnets. Conclusion: Maxillary defects can be rehabilitated either by plastic surgery or by obturator prosthesis. The treatment with plastic surgery provides better results as far as esthetic and function are concerned. However plastic surgery may be contraindicated in several cases such as age of the patient, poor general health, very large defect, and poor blood supply because of radiation therapy. In such cases, the prosthesis turns out to be the better option to treat the patient. Intra-oral obturator prosthesis restores speech and deglutition. Fabrication of an extraoral facial prosthesis challenges the artistic ability of the prosthodontist.

CRC2

Iris Positioning Technique by Using Optical Vernier Interpupillary Distance Ruler on the Custom Ocular Prosthesis

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Introduction: The iris positioning procedure is a crucial step in order to obtain a natural gaze of the custom ocular prosthesis. Some of the existing methods to produce precise and symmetrical iris orientation on the custom ocular prosthesis are quite complicated and required considerable time. This clinical report describes an easy and simple iris positioning technique by using an optical vernier interpupillary distance (IPD) ruler. Case Description: A 70-year-old male patient wanted to replace his old ill-fitting ocular prosthesis. He also refused long and frequent clinical visits. On diagnostic examination, post-enucleation socket syndrome was found on left orbital. The ocular impression tray was made immediately from clear self-cured acrylic resin, which was formed manually by fingers and placed on the tip of a disposable syringe. Afterwards, the ocular impression was taken by using light body polyvinyl-siloxane material. Wax pattern resulted from split cast technique was used to determine the center of iris position by using optical vernier IPD ruler. Blank sclera was obtained and the medio-lateral of iris on the normal eye was measured and transferred to the blank sclera by using optical vernier IPD ruler. The iris was marked and evaluated for its orientation and symmetry. Discussion: Subjective assessment by visual may bias the clinician to obtain precise iris position on the custom ocular prosthesis. Therefore, objective measurement for determining iris position is essential. Optical vernier IPD ruler is an accurate appliance/tool with millimeter scales and has movable frame to adjust the distance between the eyes. Furthermore, it is affordable, easy to use and recommended for clinical usage, especially in determining iris position. Conclusion: Simple method of iris positioning by using optical vernier IPD ruler can be an alternative way to produce acceptable custom ocular prosthesis and it took only a minute to obtain the objective measurement of iris orientation in this case.

CRC3

Drill Through the Tooth Technique for Lower Molar Implant Placement - A Case Report

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Introduction: Immediate dental implant placement is not a new technique in dental Implantology. But immediate implant placement in multirooted molars a challenging task due to several reasons, one anatomical limitations of the socket & another reason is to achieve primary stability after ideal placement of the implant along the interradicular septa.The main purpose of this case report is to present a technique of tooth act as a surgical guide for immediate implant placement in multirooted lower molar tooth. In this technique first of all the coronal portion of the tooth is reduced to the level of marginal gingiva, osteotomy has performed using center of the remaining tooth root complex as a guide. The implant site is prepared by engaging the interradicular septa.The roots of Lower molars are removed atraumatically after completing the final osteotomy site. The fixture is placed directly in prepared implant side thus allowing the precise placement with proper angulation.This technique helps the clinicians in ideal implant positioning in immediate implant placement cases and reduces the chance of the slipping drills in mesial or distal root sockets during initial osteotomies. Case description: A 26 year old female patient reported to the department of Implantology, Chitwan medical college & Hospital, Bharatpur, Nepal for the restoration right lower first molar teeth. On examination reveals extensively damaged coronal structure & radiographically reveals incomplete obturated canals. On medical examination revealed no significant medical history. The dental team decided to extract the lower right first molar & perform immediate implant placement. The surgical procedure began after taking the written consent. The surgical site was anesthetized with 2% lignocaine with 1:200000 adrenalines. The coronal structure was decoronated the gingival margin with tungsten carbide cylindrical bur. The drilling sequence was completed up to the final drill & the remaining tooth fragments were extracted atraumatically. The osteotomy site was properly irrigated with saline & Chloarhexidene & a DIO 4mm X 11.5 mm implant was placed in the center of the interradicular bone& healing abutment placed over the fixture. The gap between the implant & the bone interface was filled with BIO-OSS graft. At last Platelet rich fibrin membrane was fixed with 3-0 silk suture. Discussion: This technique has an increased risk of socket morphology alteration so careful & atraumatic tooth extraction should be followed. Researchers have claimed that it is one of the simpler techniques to obtain a correct three dimensional position of the implant.On the other hand the contraindications of this technique are severe periodontal disease, unfavourable root position, fused roots, ankyloses & active infections. Conclusion: This technique is one of simpler& less expensive technique to place the implant in correct three dimensional positions. But the long term controlled randomized clinical study regarding benefits & limitations of this technique will be required.

CRC4

Liquid Supported Denture: A Case Report

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Introduction: 'Fibrous or flabby is a superficial area of mobile soft tissue affecting the maxillary or mandibular alveolar ridges. Major problems encountered in these patients are loss of stability and inadequate retention of the denture. These problems occur because of the easily distorted flabby tissue during impression making. Case description: A Patient named Jitendra Kumar Prasad aged 54 years reported to the Department of Prosthodontics in our institution. He complained of unstable and ill-fitting denture. Intra orally the patient was completely edentulous maxillary arch with flabby tissue in the anterior region and partially edentulous mandibular arch (Kennedy's class II). Discussion: Due to presence of flabby ridge in the maxillary arch and forced distribution among the denture bearing area was unequal and unfavorable. Oral rehabilitation of patient was done by fabrication of liquid supported denture in maxillary arch and conventional denture in mandibular arch. Liquid supported denture is based on the theory that when the force is absent on denture, the base adapts to the modified form of mucosa due to hydrodynamics of the liquid which improves support, retention and stability. Conclusion: Fibrous ridge pose a prosthodontics challenge for the achievement of stable and retentive dental prosthesis. Surgical removal of the fibrous tissue and implant retained prosthesis may not be possible in all cases considering conventional prosthodontics. The use of liquid supported denture can further improve the patient's acceptance due to more uniform distribution of forces due to the improved comfort level.

CRC5

Biomechanics of Implant in Prosthetic Dentistry

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Introduction: Dental implants have become the most popular form of restorative dentistry for normal function, aesthetics, speech and health. A fundamental criterion to determine success of an implant surgery is the fast and stable implant Osseo integration; which is the formation of a direct structural and functional connection between the implant and supporting tissues. Case Report: The patient, a 25-year-old male, non-smoker in good general health, presented with a missing tooth #47. History revealed that the tooth was extracted due to failed endodontic treatment and was currently replaced with a removable partial denture. Radiographic and clinical examination revealed that bone volume was adequate in all dimensions. As the patient wanted a fixed restoration, options were discussed including an option of a conventional fixed bridge, bonded Maryland type-bridge or an implant retained crown. An implant was the preferred treatment option. Discussion: Biomechanics compromises all kinds of interaction between tissues of the body and the forces acting on them; including the responses of the biologic tissues to the applied loads. Calculating the effective firmness from homogenization of peri-implant tissues appears to be a reliable approach to predict implant stability. However, the structure-biomechanical relationship always remained a clinical challenge. Conclusion: In the early years of treating patient with osseointegrated dental implants, we underestimated the importance of biomechanics and the limitations of the systems that were available. A thorough biomechanical planning not only would confirm the suitability of the treatment, but also prove beneficial in avoiding the litigious risk.

CRC6

Uses of Lasers in Prosthodontics

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Introduction: The word laser represents an elegant Acronym as "Light Amplification by Stimulated Emission of Radiation". Today everyone knows about lasers and each one could give you a different example of how one's friend underwent a laser surgery for his eye and does not need glasses, how a cousin had a laser gynaecological surgery. In dentistry also recently, laser is widely used. Case Description: Patient came to the department of prosthodontics in our institution with the complaint of endodontically treated broken tooth. On clinical and radiographical examination no evidence of periapical involvement was found and very little amount of coronal supragingival tooth structure was left. Discussion: The patient was planned to increase the supragingival coronal structure by crown lengthening procedure using laser assisted gingivectomy before final prosthesis i.e. post core crown. Conclusion: Dental lasers are now well stablished instruments. Ongoing research is showing the many benefits of dental laser, mainly soft tissue lasers. In prosthodontics one of the important uses of dental soft tissue laser is crown lengthening by gingivectomy which ultimately aids in proper fabrication of the ferrule, in an increased amount of supra gingivally available coronal tooth structures. A perfect ferrule ultimately results better prognosis of post core crown.

CRC7 Soft Tissue Moulding Technique in Immediate Implant Placement and Provisionalization

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Introduction: Although immediate implant placement can reduce discomfort from multiple surgeries, it is always a challenging procedure. Initial implant stability to achieve osseointegration and final soft tissue contour are main concerns. In this case presentation, details in immediate implant placement and soft tissue moulding technique in immediate provisionalization will be reported. Some guidelines for promising aesthetic outcomes will also be reviewed. Case Description: A 28-y/o female presented with root fracture of tooth 21. CBCT image revealed sufficient labial bone plate and no periapical lesion, which is ideal for immediate implant placement. A surgical guide for implant placement was fabricated before surgery. Flapless surgery and atraumatic tooth extraction was performed. Then the implant was placed into the socket. Implant insertion torque was higher than 30Ncm and immediate provisionalization was done as scheduled. The emergence profile of the provisional crown was adjusted once within the healing period of 6 months. After soft tissue and hard tissue matured, the gingival contour was transferred to the master cast and an all-ceramic restoration was fabricated and delivered. Discussion: During soft tissue moulding, two zones of emergence profile should be taken into consideration- (i) aesthetic zone, from marginal gingiva to the level of subgingival 2-3mm, determines the soft tissue contour around the restoration, (ii) supporting zone, locating between bone and 1mm above implant platform, provides the stability of peri-implant tissue. Conclusion: Rigorous selection criteria and delicate treatment procedures are key factors of success in immediate implant placement and provisionalization.

CRC8 The 28 Years Observation of a Maxillectomy Patient: A Case Report

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Introduction: In order to confirm the optimal treatment planning such as denture design or check-up schedule, discussion about long-term observation case is useful. This case report describes the 28 years' follow-up of prosthodontic treatment in a maxillectomy patient. Case description: In 1990, 62-year-old female patient was referred to our department for the fabrication of prosthesis. In 1988, she has under gone maxillectomy because of a squamous cell carcinoma in the right maxilla. The tumor was successfully treated by excision, chemotherapy and radiation in the department of Otorhinolaryngology of a medical hospital. After the prosthodontic preparation, first interim obturator with acrylic base was inserted. Two years later, second interim obturator with O-P anchor attachment was inserted. In 2002, a definitive obturator with a metal frame was inserted. After that, she occasionally lost her teeth and prosthesis was renewed for three times. In 2016, when she was 90 years old, she was diagnosed with radiation osteomyelitis on the left maxilla. In 2018, sequestrectomy was operated and a new prosthesis was fabricated. During these 28 years, she kept visiting our clinic for checkup once a month. There has been no recurrence. Her plaque control has been good. Now she is using her prosthesis without any problem. Discussion and Conclusion: Even with good hygiene and without recurrence of tumor, she lost teeth and needed the several times of prosthesis fabrication. It was suggested that the history of radiation should be taken in account to make a long-term prognosis in maxillofacial rehabilitation.

CRC9 Designing and Fabrication of Highly Precisive Robotic Arm with 3D Printing Technology for a Congenitally Missing Patient - A Clinical Case

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Introduction: Bionic arm is a prosthesis which will allow the amputees to control it with their own brain instead of depending on the mechanical functions of the artificial limbs which are moreover available in the market. A complex design of controlled systems is embedded in the bionic arm which will analyse and receive the signals from the brain, which converts the electrical energy into mechanical energy, making the bionic arm move. Case description: A 10 year old boy came to the dental office with congenitally missing right hand and needs to replace it prosthetically. This case study describes the complete fabrication of missing arm by CT scan obtained from contralateral hand of the patient, and printing it with an light weight material in which the required motors and sensors are attached into that, where it is directly connected to the microprocessor and the electrodes from this processor are placed on the surface of the chest muscles. Discussion: To control the prosthetic hand, brain sends signal through motor nerves, electrodes will receive those signals and transmits it to the microprocessor, which controls the prosthetic hand according to patient's perception. Ultimately more commands can be programmed into the robotic prosthesis, making it more functional since the signals are detected from spinal motor neurons. Conclusion: The overall concept of fabricating the highly presicive robotic hand prosthesis is to make it economical; still there are other manufacturers who fabricate the robotic prosthesis, which is quite expensive. In this fabrication, only the required datas which are obtained from the patient is 3D designed and printed, which makes the complete fabrication economical for the patient to accept and improve their quality of life.

CRC10 Sectional Impression for a Total Maxillectomy Patient Reconstructed with Free Flap: A Clinical Report

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Introduction: With increased prevalence of oral cancer, demand for prosthesis to improve chewing function and aesthetics for survived patients has also increased. Reconstruction using free flap for surgical defects resulting scar tissue formation and overlying unsupported and fluctuant tissue increases difficulties in complete denture rehabilitation. The sectional impression method was employed for conventional impression in the healthy side and minimal pressure impression for the flap side to reduce compression of the tissues. Case description: A total maxillectomy patient who has received anterolateral thigh flap reconstruction required complete denture rehabilitation. Preliminary impression for base plate and occlusal rim fabrication was made with irreversible hydrocolloid with tissue displacement in the flap side. Centric relation was taken after the optimal vertical dimension has been determined. The base plate in the flap side was sectioned off and undercuts created in the remaining periphery of the base plate. Border molding used heavy-bodied polyvinylsiloxane for the healthy edentulous ridge, then final impression with light-bodied polyvinylsiloxane with mouth closed. While the baseplate was reseated in the secured position, plaster was painted onto the mobile free flap region with the patient opened and closed her mouth. A master cast was then poured and dentures fabricated accordingly. Discussion: The purpose of sectional impression is to gain maximal retention of the denture with unavoidable movement of the free flap attached to perioral muscles during mandibular movement. Free flap without bony support also results in poor denture support and stability with high risk of denture fracture. Conclusion: Careful selection of impression methods helps to avoid compression of free flap, therefore improve the retention of complete denture.

CRC11 Management of Trigeminal Neuralgia in a Patient after Lower Tooth Extraction: A Case Report

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Introduction: The occurrence of trigeminal neuralgia (TN) is most often secondary to trauma, such as inferior alveolar nerve injuries associated with extraction of mandibular tooth. Therefore, careful examinations and complete history are needed. Case description: A 47 years old woman was referred for assessment of enigmatic pain in her lower right region. She complained of sharp, tingling, periodic, and sudden pain accompanied by headaches. These symptoms, first started 3 years ago after extraction of tooth 32 and reappeared after extraction of tooth 31 two years ago. Six months later, the pain rose again and spread to the area of extractions. The pain was getting severe, which made her difficult to talk, drink, eat, brush the teeth, and wash her face. Previous endodontic treatment and medication did not resolve her conditions. Diagnosis was established as TN. Administration of anticonvulsant drug (i.e., carbamazepine) is one of the treatment choices. Carbamazepine 100 mg twice daily was first administered for 3 weeks, followed by 200 mg twice daily. The pain slowly reduced after 5 months. Afterwards, the dose is reduced into 100 mg/ day for 7 weeks. At this time, she was able to do activities much more comfortable. Right now, the frequency of drugs becomes 3 times a week. Discussion: Patient's complete history is very important. Drug of choice for TN is carbamazepine. It could reduce both the frequency and intensity of pain. The dose could be tapered once the pain has been controlled. Conclusion: Correct diagnosis of TN is very important in order to deliver appropriate treatment.

CRC12 Prosthetic Rehabilitation of a Patient with Surgically Acquired Valopharyngeal Insufficiency and Partial Glossectomy

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Introduction: Oral cancer is the most prevalent malignancy amongst males in Sri Lanka. The tongue is one of the most frequent sites for cancer, representing 26% of all oral cancers and 0.7% of all carcinomas. Surgical removal of the soft palate and the tongue are devastating conditions from a psychosocial standpoint. Case Description: A 52-year-old male presented with the complaint of food packing and ill-fitting obturator. He was diagnosed with Squamous Cell Carcinoma (SCC) of the tongue, extending towards the soft palate and tonsillar fossa and underwent radical neck dissection and left side partial glossectomy 2 years ago. The SCC had recurred a year later and was treated with wide local excision of the hard palate and the left side of soft palate. The patient was partially edentulous with reduced Occlusal Vertical Dimension (OVD). This patient was treated with pharyngeal obturator and a telescopic overdenture for the lower arch using neutral zone technique. Discussion: Properly constructed pharyngeal obturator is needed to get the proper resonance without nasal regurgitation. Telescopic overdenture with neutral zone technique improved the retention and stability of the denture. Increased OVD improved the appearance and masticatory efficiency. Conclusion: Proper planning and diligent execution is important to provide a comfortable and functional prosthesis, which significantly enhance patient's quality of life.

CRC13 Modified Telescopic Overdenture as an Alternative for Hyperactive Gag Reflex Patient

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Introduction: Conventional maxillary denture with palatal portion coverage frequently cause discomfort, decreased speaking ability, taste perception, and often caused nausea especially in patients with hyperactive gag reflex. Furthermore, one commonly used as an alternative treatment is a telescopic overdenture. This system allows us to remove the palatal portion in which enable patient to talk easier, restore taste perception, and reduce gag reflex. This paper is aimed to describe the prosthetic rehabilitation of hyperactive gag reflex patient with modified telescopic overdenture. Case Description: A 67-year-old male patient came with a chief complaint of discomfort denture especially on maxilla. He had conventional maxillary denture with palatal coverage. He felt nauseous and about to vomit every time he wore the denture. Discussion: The preferred treatment of the maxilla is modified telescopic overdenture with reduced palatal portion and for the mandible is removable partial denture. Modified telescopic overdenture using conical primary telescopic copings on tooth 13 and 23 with 2° angulations, 6 mm height, and 0.7 mm thickness therefore the denture will have sufficient retention from the friction. First of all, we determined vertical dimensions and centric relations using red wax, and then mounted to the articulator to get the final view of denture thus it will guide operator in abutment's preparation and also guide dental laboratory to make telescopic copings, denture frame and arranged artificial teeth. Conclusion: Modified telescopic overdenture has shown clear advantages particularly increasing comfort in patient with hyperactive gag reflex.

CRC14 Management of Implant Induced Neuropathy with Sticky Bone & PRF - A Case Report

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Introduction: Compression injury to the mandibular nerve, by dental implants, can trigger, a sharp stabbing neuropathic pain of the involved lower jaw. This is a case report of management of implant induced neuropathy i.e removal of existing implant followed by immediate implant placement with Sticky boneTM grafting and PRF membrane. Case Description: A 47-year-old female patient complained of "shooting", "stabbing" pain, involving region of right ear to chin, for past 5 years. Clinical examination revealed two implants in 47 region, well osseointegrated, with no signs of inflammation. CBCT showed mesial implant being placed very close to nerve. Treatment was planned to remove the implants and immediately place a single short implant. The implant was removed with reverse torque, under local anaesthesia. Osteotomy done utilising the inter implant bone and the distal implant socket. Osstem TSIII 5mm /8.5mm implant placed. Phlebotomy done. Sticky boneTM made with AFG and Alloplast. The site was covered using PRF membrane and sutured. The pain described as "Shooting", "stabbing", disappeared completely after a month of surgery. After 6 months, the implant was restored with screw-retained prosthesis. Discussion: Indirect Injuries to Mandibular nerve due to implants, where there is no contact between the implant and the nerve, can trigger, neuralgic pain. The objective is to remove the implant with minimal trauma, followed by immediate implant placement with, effective grafting rich in growth factors. Sticky bone and PRF were preferred, since they are excellent sources of growth factors. Conclusion: Patient relieved of pain. Dental implants placed nearest to mandibular nerve, cause compression, triggering neuralgic pain. Meticulous treatment planning and technique mandatory to avoid implant induced Neuropathy.

CRC15

Management of Snoring with Novel Mandibular Advancement Device in a Bruxing Patient: A Case Report

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Introduction: Snoring either on its own or associated with mild obstructive sleep apnea can be managed with oral appliance. We reported a case which utilized a novel Mandibular Advancement Device (MAD) to manage snoring with sleep bruxism. Case description: A 52-years old lady was referred to Postgraduate Prosthodontics clinic for management of snoring. Patient was diagnosed with primary snoring without apnea, and sleep-bruxism. She was previously provided with a two-piece type commercially-available MAD with position-fixed adjuster but it repeatedly fractured at the connector due to inability to withstand forces resulted from bruxism. A novel MAD was fabricated to address her problem. Slight muscular pain was resolved with occlusal adjustments during post-insertion visits. Patient was reviewed regularly after a week, 1-month and 3-months. She self-reported 70-80% reduction in snoring intensity with improved sleep quality. She tolerated appliance comfortably with compliance. Bedpartners assessment also revealed improvement in reduction of snoring. Discussion: With the aim of reducing snoring intensity and managing sleep-bruxism, a two-piece novel MAD was fabricated. Separate arch piece with clasp-fixers allows free lateral movements without simply being dislodged. Continuous-screw-adjuster permits easy adjustment of mandibular advancement to the most comfortable position. Small arch conforming design made with heat-cured acrylic resin gives superiority to comfort and strength. It was also designed to be in simultaneous contact to act as a splint for bruxism. In addition, it is relatively straight forward to fabricate and cost-effective. Conclusion: The novel mandibular advancement device delivers positive improvements in the management of snoring in patient with bruxism without appliance breakage.

CRC16

Different Approaches to Morse Taper Abutment Fracture

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Introduction: Conical internal connection (CIC; internal friction type) or the so-called Morse taper design provides a tight junction through the friction between implant fixture and abutment, & not through a screw. However, there are abutments which incorporate both designs to ensure that the abutment would not loosen. Having said so, they are difficult to deal with in the event of abutment fracture. Case descriptions: This series of cases highlight fractures associated with Morse taper abutment and its range of managements. The first case was managed by disengaging both the old abutment and its connection screw using a kit manufactured by the supplier, while the second case involved removing the abutment and screw by drilling away the inner chamber of the abutment, followed by the removal of the fractured screw using a modified screw removal kit. The last case involved the removal of the implant concerned by trephining, when both described approaches failed. Discussion: The addition of a screw to abutments with a Morse taper design makes them very difficult to remove if both are fractured. In the second case, we have to modify a drill stabilising sleeve to engage the screw as there's none commercially available. Conclusion: This presentation highlights the need of different types of management to Morse taper abutment fracture from merely unscrewing the old abutment (mild approach), to removing the abutment and screw (moderate approach) and finally to removing the implant concerned (severe approach).

CRC17

Full Mouth Rehabilitation Utilising the Shortened Dental Arch Concept

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Introduction: The shortened dental arch (SDA) concept was originally introduced by Arnd Kayser in 1981. It is defined as having an intact anterior region but a reduction in the occluding pairs of posterior teeth. This approach appears to be cost-effective and has shown to improve the quality of life of patients. Case description: A 66 years-old Chinese male presented with generalised severe attrition of his dentition due to a lack of posterior support and parafunctional habits. Negligence of his oral health occurred when he was diagnosed with colon cancer in year 2013. After surviving cancer, he decided to seek dental treatment to restore his dentition. His full mouth rehabilitation provided cuspal coverage up to the second premolars with multiple single porcelain-fused-to-metal (PFM) crowns at a raised vertical dimension. Two implants were placed to restore the missing maxillary left premolars. Discussion: The SDA concept is not commonly practiced given the concerns related to occlusal stability and temporomandibular disorders. However, the patient was not keen to proceed with sinus augmentation required for the planned implant restorations at the molar region. The reduced number of occlusal units is a potential risk factor in the rehabilitation of shortened dental arches. The provisional phase was critical to determine the feasibility and long-term prognosis of this treatment plan. Conclusion: Overall, the patient was satisfied with the final treatment outcome, stating improved masticatory function and quality of life despite being restored to a shortened dental arch. The SDA concept may be utilised as an alternative treatment option for full mouth rehabilitation.

CRC18

Prosthetic Rehabilitation of a Microtia Patient: A Challenging Wax Sculpture Technique

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Introduction**:** Auricular deformity can be emotionally traumatising and affects social behaviour of an individual. In such cases, aesthetically acceptable prosthesis serves as a viable alternative technique to surgical reconstruction. Case description: Impression of the auricular defect was taken by light and regular body of poly vinyl siloxane impression material. Wax sculpting was challenging due to the bulgy remnant of the defected ear. The wax pattern was made very thin to accommodate and mask the remnant without compromising the aesthetic. Trial on the patient was done for correction of the contours, angulation, height and width according to the normal contralateral ear. The intrinsic coloration of a Room Temperature Vulcanizing silicone was done and poured in a custom made three-piece mould. Before the final issue of the auricular prosthesis, extrinsic coloration was done based on the surrounding area of the defect. Discussion**:** Fabrication of adhesive retained prosthesis is challenging in patients with large deformed soft tissue who refuse to undergo surgical repair. A modified wax sculpting was done to overcome this challenge. Medical grade silicone was the choice of material because of its flexibility, biocompatibility and life like appearance. Conclusion: Replacement of missing ear is a difficult and multi-step task in which extensive array of materials and techniques need to be employed. This fabrication technique is alternative to surgical repair with the utilization of available and economical materials.

CRC19 Management of Generalised Non-carious Tooth Surface Loss

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Introduction: This case demonstrates the management of non-carious tooth surface loss with loss of occlusal vertical dimension, exercising multidisciplinary approach relevant to periodontics, endodontics and prosthodontics. Case description: The tooth wear was qualitatively graded moderate to severe anteriorly which rendered the teeth having considerably reduced clinical crown height, affecting the aesthetics and comfort. This was believed to be caused by high acidic diet intake and exaggerated by parafunctional habit. Rehabilitation of this case involves restoring the anterior teeth at an increased occlusal vertical dimension, by means of reorganised approach and allowing relative axial tooth movement posteriorly. Discussion: The rationale for the use of full coverage restorations on the maxillary anterior teeth is to allow control over occlusion and aesthetics. Restoring the dentition at an increased vertical dimension minimises the amount of vertical tooth reduction needed. Surgical crown lengthening allows the utilisation of increased occlusogingival height of the preparation to enhance the resistance form of the final restorations. Direct composite restorations benefited the mandibular anterior teeth as they are more conservative, minimises the chances of pulpal damage from tooth preparation and are easily repaired. The decision to allow relative axial tooth movement of the remaining posterior teeth is because they do not require any restorative intervention and this technique has been shown to be predictable and effective. Conclusion: Tooth wear is a significant clinical problem and treatment modalities adapted should provide protection to the dentition and improve the overall satisfaction of the patient.

CRC20 Restoration with Implant-Supported Maxillary Overdenture and Implant-Assisted Mandibular RPD Using Double-Scanning Method and Rapid-Prototyping Technique

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Introduction: This case report describes simultaneous fabrication of implant-supported OD for fully edentulous maxilla and implant-assisted RPD for unilateral edentulous mandible using double scanning method and 3D printing technology to achieve cost effectiveness and simplified laboratory work. Case description: A 67-year-old male patient with fractured denture had requested to make new maxillary and mandibular dentures using minimal number of implants. The patient was fully edentulous in maxilla with deficient volume at pre-maxilla region and remaining teeth were only mandibular right canine and 1st premolar. For the treatment plan, four-implant supported overdenture with bar in maxilla and two natural tooth and two implant-assisted RPD were selected. Discussion: To achieve an exact fabrication procedure, this case study suggests a digital technology assisted laboratory procedures using double scanning method, 3-D design and 3-D printing technology. The definitive casts, along with the interim dentures, were digitalized using an optical scanner, and the bars and frameworks were casted using 3-D printed interim bars after they were designed virtually in 3-D design software. Both implant-supported maxillary OD and implant-assisted mandibular RPD were designed and fabricated simultaneously. The patient was satisfied with aesthetics and function of the prosthesis. Conclusion: In this study, the application of the double scanning method and rapid prototyping technique in fabrication of Hader bar and metal framework for implant-supported bar OD and implant-assisted RPD showed an acceptable result. In addition, those method made the laboratory procedures more efficient with less possibility of errors.

CRC21 Management of Complications Associated with Ball Abutments in a Maxillary Over Denture - A Case Report

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Introduction: Rehabilitation of maxillary fully edentulous arch with overdentures poses some unique challenges unlike mandible, where two implant supported overdenture is considered as the standard care. In case of maxilla, literature is unclear about the number of implants, splinting implants together, type of attachments,, variations in opposing arch, with no consensus. Moreover, the divergent bony architecture of maxilla makes parallelism of implants difficult to achieve. Angled multi-unit abutments adopted from all-on -four concepts provide correction up to 40 degrees. This case report describes management of complications associated with ball abutments in maxillary overdenture rehabilitation. Case description: A 52yr old male patient reported with frequent complaints of screw loosening and o ring slippage and two episodes of midline fracture in a maxillary over denture opposing several natural teeth and RPD. On examination the implants were found to be well integrated. A working study cast revealed non- parallel inplants resulting in prosthesis unseating. Also opposing natural teeth overloads the attachment and prosthesis. Discussion: This case report describes successful management of these prosthetic failure of maxillary over denture by augmenting the support and stability by increasing the number of implants to three where the 3rd implant was placed at strategic position, at midway between the existing implants for even load distribution and constructing a custom bar facilitated by angled multi-unit abutment. Conclusion: Custom bar attachment provides a firm foundation on unique maxillary overdenture situations .Angled multi- unit abutments provide great versatility in managing non parallel implants.

CRC22 Multidisciplinary Management of Anterior Tooth Wear

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Introduction**:** Management of tooth wear has been described in the literature. Each of them followed various techniques and materials to restore patient's worn teeth that mainly depend on their clinical presentations. In some cases, an interdisciplinary approach is the best option to restore the function and enhance the aesthetics features. Case Description: A 65-year-old female patient presented with anterior tooth wear. Further history established a long history of bruxism and acidic drinks consumption. Upon examination, gummy smile, secondary caries and tooth wear were noted. Width- to- length proportion of maxillary anterior teeth were below the standard value. Treatment was done in several phases which include, dietary advice, visualizing treatment with diagnostic try in, stabilisation and definitive phases. The improvements needed were being verified using the provision of template based on diagnostic wax-up at increasing vertical dimension. A combination of periodontal crown lengthening and direct and indirect restorations was completed on this patient. Discussion**:** Periodontal crown lengthening has provided several benefits on the smile and the tooth proportion of the anterior teeth. In the stabilisation phase, the patient was assessed on her coping mechanism towards increasing vertical dimension and the desired endpoint of treatment relative to tooth position, gingival levels, papilla levels. The versatility of the composites as a long term provisional in this phase that can be altered meanwhile maintains its optimum aesthetics. Conclusion**:** Multidisciplinary approach is recommended in the management of anterior tooth wear for better function, comfort and aesthetics.

CRC23 Full Mouth Rehabilitation in a Patient with Severe Generalized Tooth Wear as a Result of Prolonged Plant-Based Diet

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Introduction: Management of tooth wear complicated by partial edentulism and loss of vertical dimension requires many phases of treatment. Direct composite restoration offers a predictable result and has the advantage of being reversible, all pointing to suitability for stabilisation phase of tooth wear management. Provision of removable partial overdenture would help in getting the patient accustomed to the new vertical height whilst preserving the underlying alveolar bone for future restorative plan. Case description: A 61-year old patient with history of prolonged plant-based diet due to extended living in the jungle as part of his profession's requirement presented with severe generalized tooth wear, partial edentulism and loss of vertical height. He received a mandibular anterior composite resin build-ups and removable partial overdenture, making use of severely worn teeth he refused to part with. Discussion: The provision of composite resin build-up apart from being aesthetic helps in the design of the lower partial overdenture. The overdenture is part of occlusal stabilisation strategy whilst allowing the patient to achieve function and aesthetic. Conclusion: The process of rehabilitating this patient has addressed the stabilisation phase, where disease process has ceased, new vertical height introduced and assessed and function and aesthetic restored to some extent.

Case Report - Non Competition

Session No.	Presenter	Title of Poster
CRNC1	Ivana	Magnet Repositioning on Two Separate Custom Tray for Flabby Ridge Impression
CRNC2	Anupriya S.	Resorbed Ridge Rehabilitation with Multiple Suction Cups Denture
CRNC3	Sumitro	Usage of Soft Vacuum Form Spacer to Overcome the Limitation of Conventional Wax Spacer
CRNC4	Shubhra Jyoti	"Obturator"-Boon for Patients with Palatal Defect
CRNC5	Foo Mei Fong	Gingival Veneer: A Prosthetic Solution to Enhance Smile by Masking Aesthetically Challenging Gum Recession
CRNC6	Mi-Joo Kim	Digital Approach to Assessing the 3-Dimensional Misfit of Fixed Dental Prostheses
CRNC7	Leni Hadi	Management of Spontaneous Dislocation and Headache Attributed to TMD Using Stabilization Splint: Case Report
CRNC8	Bibi Aisiah Babu Osman	A Novel Edentulous Baseplate Tray for a 1-Day Full Denture Technique
CRNC9	Yeek Ying Sin	Mandibular Implant Supported Removable Partial Denture: A Case Report
CRNC10	Ji Hyun Kim	Prosthetic Rehabilitation with Orthognathic Surgery after Dental Implant for the Patient with Mandibular Prognathism and Loss of Posterior Teeth: A Case Report
CRNC11	Nur Hafizah Binti Kamar Affendi	Sequential and Simplified Approach for Full Mouth Implant Supported Fixed Dental Prosthesis: A Clinical Report
CRNC12	Yen-Ju Fang	Implant Supported Overdenture Rehabilitation with a 3D Printed Framework for a Mandibulectomy Patient: A Case Report
CRNC13	Yu-Chou Huang	Full Mouth Rehabilitation in a Deep Bite Case with Posterior Implant-Supported Fixed Dental Prosthesis
CRNC14	Aiemeeza Rajali	Refining Custom Made Ocular Prosthesis in Rehabilitation of Phthisis Bulbi Secondary to HIV Infection
CRNC15	Mario F. Guiang Jr.	Neuromuscular Dentistry: Transcutaneous Electrical Nerve Stimulation and Orthotic Solutions In Full Mouth Reconstruction
CRNC16	Wong Jin Lin	One-Year Follow-up of a Maxillary First Molar Restored with an Endocrown
CRNC17	Lin, Shu-You	Maxilla Reconstruction with 12 Telescopic Bridge Fixed Dental Prosthesis
CRNC18	Sharon Lee Sher Ling	Healing Large Bone Defect with Concentrated Growth Factor in Window Sinus Lift: A Case Report

CRNC1 Magnet Repositioning on Two Separate Custom Tray for Flabby Ridge Impression

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Introduction: Accurate impression in complete edentulous patient with flabby ridge plays important role in the fabrication of well-fitting conventional complete denture. One of the impression technique to minimize tissue distortion of flabby ridge is window technique which also poses challenge for clinician. This case report presents reposition of two separate tray (window tray and pick up tray) by using magnet for flabby ridge impression. Case Description: 63 year old male patient with chief complaint of ill-fitting complete denture visited Department of Prosthodontic. During intra oral examination, displaceable flabby tissue was found on anterior maxilla. Impression was taken by using two seperate tray. The first tray is window tray for recording posterior maxillary ridge with regular body polyvinylsiloxane (PVS) material. Afterwards, the anterior flabby ridge was recorded with the application of light body PVS through the window of the first tray, then the second pick up tray was placed with the help of magnet that was embedded on the tray. Discussion: Window impression technique was modified by using a pick up tray with escape holes to control the application of light body PVS to obtain uniform thickness of the material without tissue distortion. In this case, we also embedded five pairs of magnet in the tray for accurate repositioning of the second tray to the first. Conclusion: Proper diagnosis and treatment planning determine the success of the treatment. Therefore, accurate impression of the flabby ridge must be achieved without any displacement to provide better retention and stabilitation of conventional complete denture.

CRNC2 Resorbed Ridge Rehabilitation with Multiple Suction Cups Denture

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Introduction: Retention of dentures is the basic concern of edentulous patients. This has led to considerable experimentation and research in efforts to perfect dentures that compensate for the loss of natural teeth. The use of multiple miniature suction cups made from a soft material lining the denture satisfies the requirements of retention. Case Description: This case report represents a patient with severe bone resorption were complicating factors precluded the surgical intervention with grafts or dental implants. For this case, A conventional denture modified with multiple suction cups in the tissue surface of the denture was fabricated with heat-cured PMMA and soft lining silicone by creating multiple holes of 2mm in master cast. Discussion: The multi-suction cup denture liner was used to enhance retention and comfort for complete denture. When the user stops applying a force to the suction cup the elastic properties of the material cause it to return to its original shape. It is the pressure differential which creates the retention. Conclusion: This case reports describes a simple technique for enhancing the retention for the dentures by using multiple suction cups.

CRNC3 Usage of Soft Vacuum Form Spacer to Overcome the Limitation of Conventional Wax Spacer

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Introduction: Spacer adaptation has an important role in the procedure for making the definitive impression for complete denture. Wax spacer have several disadvantages such as nonuniform thickness and difficulty of removal from acrylic resin. In flabby ridge cases, the spacer used need to be at least 3mm in thickness to accommodate the space needed for impression material. This paper presented the technique used to overcome the limitation of conventional wax spacer. Case description: A 57 years old lady patient presented with with flabby tissue at anterior region of maxilla. Preliminary impression made by irreversible hydrocolloid and poured with dental stone type III to make the cast for a custom impression tray. The spacer is made using 1 sheet of 1.5mm soft vacuum form spacer placed at the non-flabby area and 2 sheets of 1.5mm soft vacuum form spacer placed at flabby ridge area. The spacer then trimmed to the desired spacer design. Clear acrylic resin is used to fabricate custom impression tray. Discussion: By using two sheet of soft vacuum form spacer to help overcome the variability in spacer thickness needed in selective pressure impression technique. This material is easier to peel off than wax spacer because the wax tends to adheres more to acrylic. However, this technique had several disadvantages such as required vacuum forming machine and more expensive than conventional wax spacer. Conclusion: Using soft vacuum form spacer is easy to do, can be used under a variety of conditions and offer several advantages such as saved time, easy to peel off from custom impression tray and ensure uniform spacer thickness needed in custom impression procedure.

CRNC4 "Obturator" - Boon for Patients with Palatal Defect

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Introduction: The most common of all intraoral defects are in the maxilla, in the form of an opening into the antrum and nasopharynx .Defects in the maxilla may be divided into congenital malformation and the acquired .The Aramany classification system of postsurgical maxillary defects is a useful tool for teaching and developing framework designs for obturator prosthesis and for enhancing communication among prosthodontists. Case description: A patient named Shiv Kumar aged 58 years, reported to the post graduate section of prosthodontics department in our institution. He complained of difficulty in deglutition, unclear speech and poor masticatory efficacy. On examination it was found that patient has undergone partial maxillectomy due to malignancy of hard palate on left side which comes under Aramany's class II classification. Discussion: Oral rehabilitation of patient was done by fabrication of definitive prosthesis called "obturator"following Aramany's class II obturator design. This prosthesis rehabilitated functions like mastication, phonation, deglutition, aesthetics and also improved psychology of the patient. Conclusion: Patients with palatal defect can be successfully treated by prosthodontists using an obturator to enhance their masticatory efficacy, phonation, deglutition, aesthetics and psychology.

CRNC5 Gingival Veneer: A Prosthetic Solution to Enhance Smile by Masking Aesthetically Challenging Gum Recession

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Introduction: Gingival veneers are custom-made, removable prostheses designed to cover the gum recession on the upper anterior teeth and thus improving the appearance of the patient's smile. The surgical treatment to treat gum recession is sometimes uncomfortable, costly with prolonged healing time and unpredictable results, making it an unpopular choice. Gingival veneer is simple, non-invasive, economical, feasible and aesthetically acceptable. Case Description: A 37-year-old gentleman with the complaint of elongated and excessive visibility of upper anterior discoloured tooth while smiling after open flap surgical debridement was done on 21. The tooth had a prolonged sinus tract and pus oozing from periodontal ligament space. Periodontal assessment revealed an increased probing pocket depths of 6mm on mesial and 5mm on labial. Gum recession is 3mm on the labial. The open flap debridement procedure was performed in November 2016. Infrabony defect of 15mm was seen on mesial and distal of 21. There was 16mm of bone loss over the labial surface. The gum recession became more severe, resulting in more displeasing aesthetic appearance, post-surgery. An acrylic gingival veneer was fabricated. Discussion: Gum recession can be corrected surgically or non-surgically. Surgical cost, unpredictable results, healing time and discomfort have made the patient to opt for a relatively easy, inexpensive, fast and practical way to allow an aesthetic replacement of the gingiva by accepting gingival veneer. Conclusion: With the fabrication of acrylic gingival veneer, the aesthetic characteristic of 21 can be improved when the loss of periodontal support is evident.

CRNC6 Digital Approach to Assessing the 3-Dimensional Misfit of Fixed Dental Prostheses

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Aim: This article aimed to introduce a method of visualizing and quantifying the fit discrepancy of fixed dental prostheses by digitizing a misfit space replica and using computer-aided spatial analysis. Materials and Methods: A master die for fixed prostheses was fabricated. A low viscosity light-body silicone was injected into the corresponding crown and seated on the die. After the silicone polymerizes, the crown was gently removed from the die. The die with and without the misfit space replica was digitized using a noncontact optical scanner. The 2 scanned files were superimposed by using the congruent base areas (Best-Fit method) in 3D image analysis software. Afterwards, the misfit space was separated from the entire image using the Boolean function. The vertical plane of interest was designated. Results: The marginal and internal discrepancies were measured digitally. Dimensional differences for the entire preparation surface were computed. A 3-dimensional, color-coded map showing discrepancy distribution and overall mean discrepancy was drawn. Conclusion: This computer-aided digital approach enables not only the quantification of marginal and internal discrepancies at measurement points but also the analysis of the mean and the distribution of discrepancy and volumes of the entire and specific regions of the discrepancy.

CRNC7

Management of Spontaneous Dislocation and Headache Attributed to TMD Using Stabilization Splint: Case Report

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Introduction: Treatment for temporomandibular disorder (TMD) is still controversial and it is preferable to eliminate pain and achieve relocation of the disc to its proper position. One of the common TMD is dislocation which characterized by inability to close the mouth. Dislocation has to be differentiated from subluxation which is a self-reducible condition. The purpose of this poster is to describe the management of a patient who developed pain and diagnosed with spontaneous dislocation and headache attributed to TMD using stabilization splint (SS). Case Description: A 33 years old female patient came with pain in her jaw after reposition of her dislocate mandible several days ago. Pain and dislocation initially felt 21 years ago after a prolonged surgical removal of an impacted tooth. Six years later, recurrent dislocation occurred and patient often had headache until now. Patient had undergone orthodontic treatment in maxilla. Patient had clenching habit and chewing on one side. Clinical examination found muscles spasms, clicking on lateral excursion, and midline deflection on mouth opening. Temporomandibular joint radiograph showed difference in both condyle position. Panoramic radiograph showed big gonial angle. The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) was Disc Displacement with Reduction (DDwR) and headache attributed to TMD. Treatment plan for this case was maxillary SS followed by orthodontic treatment. At 3 months control, muscles spasms and pain disappeared completely and subluxation only occurred one time. At 6 months control, dislocation didn't occur. Patient can open her mouth widely with no doubt. Discussion: Stabilization splint is used to provide balanced bilateral occlusal contact on a flat splint surface. This method can be used to stabilize the occlusion, muscle, and joint so that the pain and dislocation will be reduced. It provided a temporary and removable ideal occlusion at increased vertical dimension and centric relation. It increases TMJ space and allowing anterior inferior movement of the condyle so SS can manage disc-condyle disorders including dislocation. Conclusion: In this case report, SS provides favourable treatment outcome of reducing pain and occurence of mandibular dislocation, although further studies are still required.

CRNC8

A Novel Edentulous Baseplate Tray for a 1-Day Full Denture Technique

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Introduction: A 1-day full denture (1DFD) technique has been introduced to reduce multiple dental visits for complete denture fabrication. We described the use of a novel edentulous baseplate tray (1DFD Tray) to support 1DFD technique. Case Description: Complete edentulous patients with no significant bony and soft tissue abnormalities were recruited. The residual ridge width was measured to select suitable 1DFD Tray size. The tray consists of 3 parts; center part with handle, peripheral part and palatal part (maxilla only). Peripheral seal was achieved with border molding and working impression made with medium body polyvinyl-siloxane (PVS). After impression pouring, the center part of the tray was detached, leaving the peripheral part attached to the impression converting it into a base plate ready to receive maxillo-mandibular relationship record and try-in stage. After try-in, denture was processed and issued in the same day. Discussion: 1DFD Tray is a dual function innovation which performs as a custom tray for working impression making and later as baseplate. It was designed in various sizes and able to accommodate anatomical features such as torus palatinus and deep palatal vault with the removable palatal part. Eliminating the conventional primary impression, custom tray fabrication and baseplate construction stages saves time and material. The medium body polyvinyl-siloxane impressions supported by the peripheral part tray are well-fitted and dimensionally stable, ideally function as a base plate and allow denture teeth setup procedure without distortion. Conclusion: The innovative novel 1DFD Tray complement 1DFD technique to expedite denture fabrication without compromising prosthodontics principles.

CRNC9

Mandibular Implant Supported Removable Partial Denture: A Case Report

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Introduction: McGill and York consensus stated that two implants retained overdenture should be the minimum standard to restore mandibular edentulous ridge. However, this option is not without problems but need significant maintenance especially high maintenance of denture base relining and rebasing due to continuing posterior alveolar ridge resorption. Therefore, by preserving the distal end abutments, it provides a vertical occlusal stop and thus might reduce bone resorption. Case Description: A 66-year-old male patient presented to the clinic with complaints of poor stability of his mandibular denture during mastication. Clinical examination revealed unstable mandibular removable partial denture with tooth 38 and 48 abutments. Tooth 48 was diagnosed with pulp necrosis with symptomatic apical periodontitis. After the decision was made to preserve the two abutments, endodontic treatment was completed on tooth 48 by an endodontist. Two implants were placed at the anterior alveolar ridge followed by fabrication of implant supported removable partial denture. Discussion: Implants placement medially and preservation of both distal abutments might influence the amount of forces transfer to the prostheses and subsequently reduce the posterior mandibular ridges remodeling during function. Therefore, occlusal rests and circumferential clasps were incorporated in the implant supported removable partial denture design to increase the retention and yet not cause extra loading on the posterior residual ridge. Conclusion: Implant supported overdenture with the posterior displacement of the denture is a concerning factor for residual ridge resorption. Therefore, in this case report, the distal abutments were preserved to prevent excessive loading to the residual ridge.

CRNC10

Prosthetic Rehabilitation with Orthognathic Surgery after Dental Implant for the Patient with Mandibular Prognathism and Loss of Posterior Teeth: A Case Report

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Introduction: To report the satisfying result of the aesthetic improvement and the recovery of masticatory function with orthognathic surgery after implantation on posterior missing site, considering final oral rehabilitation of the mandibular prognathism patient. Case description: The patient in this case showed up with the chief complaints which are mandibular prognathism and difficulty on mastication. Skeletal malocclusion class 3 was diagnosed and multiple caries teeth were extracted. Because it was difficult to obtain adequate intermaxillary relationship for orthognathic surgery when vertical stop was lost after extraction, implantation was planned before the surgery. When the intermaxillary relationship was stabilized after the surgery, final zirconia prostheses were delivered via taking maxillary and mandibular impression. Discussion: After the final delivery, the patient was satisfied aesthetically and functionally. The prognosis is assessed via periodic observation. Conclusion: The satisfying results of aesthetic improvement and the recovery of masticatory function in the mandibular prognathism patient with occlusal collapse were accomplished by orthognathic surgery after implantation on posterior missing site.

CRNC11 Sequential and Simplified Approach for Full Mouth Implant Supported Fixed Dental Prosthesis: A Clinical Report

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Introduction: Restoring full arch implant supported fixed dental prostheses (ISFDP) cases remains one of the most challenging procedures to meet functional and aesthetic demand of the treatment. Although treatment sequencing would follow the classical steps in prosthodontic provision, the use of metal ceramic restorations may require special considerations to meet possible advantage of passivity, strength and accuracy in occlusion. Therefore, the purpose of this case report is to present sequential and simplified steps for full arch ISFDP using a provisional restoration as a guide prior to definitive restoration. Case description: 56 years old female was referred to our clinic. She was wearing removable upper and lower partial dentures. Sequential treatment was carried out by maintaining the compromised mandibular teeth as abutment to insert laboratory provisional bridge and implant placement were done on edentulous area. After healing was completed, the provisional prosthesis on dentition was then converted to provisional on implants by connecting through temporary cylinders. From here, a definitive prosthesis was carried out in four visits. Discussion: Pre-surgical fabricated fixed provisional prostheses eliminate the application of removable partial denture, have better acceptance by patient and also act as a prototype that enables clinicians to construct definitive prostheses in simple steps Conclusion: Patient with failing dentition and multiple missing teeth have the option to use the provisional restoration for earlier evaluation of aesthetic and functional result that permits ease for final delivery of definitive prostheses.

CRNC12 Implant Supported Overdenture Rehabilitation with a 3D Printed Framework for a Mandibulectomy Patient: A Case Report

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Background: Surgical defects over maxillofacial area usually cause difficulties for prosthodontic rehabilitation. The size, location and ways of defect reconstructed can influence the method of prosthodontic rehabilitation. A prosthetic procedure for a complete edentulous patient with large mandibulectomy defect will be described. Methods: A 44-year-old male, suffered from squamous cell carcinoma over right mandible, received marginal mandibulectomy and anterolateral thigh free flap reconstruction. The traditional complete dentures were no longer serviceable for the patient due to the size, location of the defect and the restriction of scar contraction close to the midline. Five dental implants were placed to gain denture stability and support. Since the denture width was limited to the scar tissue, a computer designed 3D printed cobalt-chrome customized framework was imbedded into the mandibular overdenture to enhance the rigidity. Results: Most mandibular defects reconstructed with soft tissue flaps should lead to a better life quality and functional outcome. However, the lack of hard tissue support may cause difficulty during masticatory. Dental implants provide better support and stability to the mandibular denture during functional movements. Even the right part of the mandibular denture cannot hold either dental implants or bone graft provides balancing force during lateral movements. This helps achieving equilibrium. Conclusion: With conventional prosthesis, this patient would find difficulty reaching normal masticatory function. One reason may be the different resiliency between the bony-supported normal side, and the ALT-flap-reconstructed affected side. Using dental implants and custom designed 3D printing technique can provide better service.

CRNC13 Full Mouth Rehabilitation in a Deep Bite Case with Posterior Implant-Supported Fixed Dental Prosthesis

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Introduction: The 65-year-old male patient came to the OPD for his tooth 34 and 43 endodontic treatment due to severe wear. In the light of generalized attrition of natural dentition and porcelain fracture of old fixed dental prosthesis, full mouth rehabilitation was suggested. Patient requested for fixed dental prosthesis due to his diet preference. Dental implant procedure was included in the definite treatment plan consequently. Case description: Clinical finding as follows: ③ 34 43 severe attrition lead to pulpal exposure ① Ill-fitted FDP 13X15, 24X26,27, 35X37②ClassII divisionII occlusion. After pulpal initial therapy was done, patient was referred for further periodontal and prosthodontic evaluation. Discussion: After implant placement, we used the provisional CAD / CAM PMMA prosthesis to test the chewing function for 3 months. The clinical examination showed that no cement wash out and no loosening of screw. He was satisfied with the provisional FDP including chewing function and esthetics. Finally, we completed the definitive fixed dental prosthesis. Conclusion: The stable occlusion with established posterior support is crucial to a case with generalized worn dentition.

CRNC14 Refining Custom Made Ocular Prosthesis in Rehabilitation of Phthisis Bulbi Secondary to HIV Infection

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Introduction: Phthisis bulbi is often associated with ocular atrophy and consequence of degenerative process of severely damaged eye. Prosthesis rehabilitation over residual eye ball is the preferred treatment during disease progress as it maintains anatomic integrity of the surrounding tissue. Case description: A 42 years old man was referred for an ocular prosthesis over his defective left eye. Being a HIV-positive person receiving highly active antiretroviral therapy (HAART), he had undergone multiple eyes surgery for complications from cytomegalovirus retinitis. Although already prescribed and use a ready-made ocular prosthesis, it had caused great discomfort and a teary eye. The clinical appearance showed the atrophied and shrinkage of left eye and enophthalmos with disfigured sclera, with reduce palpebral opening and vision loss. Prior to the construction of prosthesis, the right eye was photographed digitally with meticulously dimensional measurements made as reference to produce a close replica. Refinement impression was done to the custom made ocular prosthesis and relining on the fitting surface to enhance the fit was prescribed. Discussion: The approach provided a technical advantage in establish the accuracy of prosthesis, close approximation of the eyeball and minimal clinical exposure. The bulk of ocular prosthesis is important as it gives proper support to eyelid, even volume and weight distribution in the socket while providing adequate mobility with minimal discomfort and no potential space for tear accumulation. Conclusion: Major challenge imposed by a phthisis bulbi is the progression of the condition. This approach however, provides opportunity for prosthesis reshaping, refining and better acceptance by patient.

CRNC15 Neuromuscular Dentistry: Transcutaneous Electrical Nerve Stimulation and Orthotic Solutions in Full Mouth Reconstruction

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Introduction: Temporomandibular disorders (TMD) happen as a result of problems with the jaw, jaw joint and surrounding facial nerves and muscles that that control jaw movement. Hundreds of clinical reports exist concerning the use of (TENS) for various types of conditions, including myofascial and arthritic pain. Orthoses is an externally applied device used to modify the structural and functional characteristics of the neuromuscular and skeletal system. Case Description: This poster will present two full mouth reconstruction cases which utilized transcutaneous electrical nerve stimulation (TENS) and orthotics in their treatments. In the first case, transcutaneous electrical nerve stimulation (TENS) and orthosis was used to increase the occlusion of a patient with severe overbite. While in the second case, TENS and orthosis was used to recapture the occlusion of the patient with posterior open bite. Discussion & Conclusion: Overbite and open bite can be treated using transcutaneous electrical nerve stimulation and orthoses to obtain a correct occlusion. It can also relieve some symptoms of temporomandibular dysfunction. This poster presents to the dental practioners the importance of restoring a balanced occlusal relationship, and encourages them to incorporate the use of TENS and orthotics in their treatment planning.

CRNC16 One-Year Follow-up of a Maxillary First Molar Restored with an Endocrown

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Introduction: Endocrown is an alternative restorative option for endodontically treated teeth with significant loss of coronal structure. It is a 1-piece restoration that uses the pulp chamber for retention by means of adhesive cementation. This approach is gaining popularity and various materials have been reported. Case description: A 72 years old Chinese female presented with a heavily restored and endodontically treated maxillary right first molar. The tooth was given a guarded prognosis due to the loss of substantial tooth structure. The decision was made for an endocrown as opposed to the conventional method of crown lengthening surgery followed by a cast-post-core and crown. Crown lengthening was contraindicated given the short roots and close proximity of the root furcation to the crestal bone. The endocrown was fabricated using monolithic zirconia and cemented with resin cement using the adhesive technique. There were no complications reported during the review appointments. Discussion: Endocrown is a single monoblock restoration consisting of a intraradicular post, core and crown. It allows for the conservation of tooth structure and also a reduced clinical time. Retention of the crown is obtained via macroretention by engaging the internal wall of the pulp chamber and the crown preparation margins while micro-retention is achieved with the use of adhesive cements. Conclusion: The patient was satisfied with the treatment outcome. At one-year follow-up, the endocrown is still functional and in good condition. Endocrowns may be considered as a feasible treatment option for the restoration of endodontically treated teeth with compromised tooth structure. However, stringent case selection is necessary.

CRNC17 Maxilla Reconstruction with 12 Telescopic Fixed Dental Prosthesis

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Introduction: Patient came to the outpatient department with 16 to 26 provisional fixed dental prosthesis (FDP). Due to past unpleasant dental experience, patient denied traditional FDP and traditional RDP for rehabilitation. He mentioned the information about telescopic restoration which he found on the internet. After evaluation of the residual tooth structure and periodontal status of the existing abutment teeth, the idea of telescopic prosthesis was accepted. Case description: A 52-year-old patient asked for full mouth rehabilitation. Clinical finding as follows:①21 22 23 residual root ②Upper and lower partial edentulism ③Class II jaw relationship. After completion of the 12 unit telescopic FDP of the maxilla, he was satisfied with the chewing function and appearance. He could unwear the denture and clean the prosthesis which was very important for him, since he was concerned about further tooth decay or periodontal inflammation. Discussion: After three months, he came back and told us that the prosthesis was broken because it fell down on the floor during cleaning. The clinical examination showed that the metal substructure could not be fitted in due to the distortion. Because he was reluctant to remove the inner crown, we faced the problem of fabricating a precise FDP that could be fitted into mouth. Eventually, we used provisional CAD / CAM PMMA to fabricate the 12 unit outer crown. Finally he was satisfied with the new prosthesis again including chewing function and esthetic. Conclusion: This technique can help patient satisfied the second prosthesis although the material is provisional CAD/CAM PMMA.

CRNC18 Healing Large Bone Defect with Concentrated Growth Factor in Window Sinus Lift: A Case Report

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Introduction: Large bone defects usually need large membrane to cover and months for bone maturation. Healing of large bone defect has improved by the use of Concentrated Growth Factor CGF liquid phase mixture with bone graft to increase cell proliferation, and CGF solid phase as membrane to speed up soft tissue healing and maturation therefore leaving inner bone to consolidate. Case description : Male 55y/o without medical problem require a implant at #14, #25 and #26 ; CBCT show need of sinus lift on #25 #26 which requiring 9mm of augmentation. 5tube of blood was drawn for CGF; sinus lift was done by lateral window without perforation. One CGF membrane was tuck in to protect membrane layer. 0.5CC allograft mix with CGF liquid phase, bone become sticky and packed without pressure condensation. 2CGF membrane was covered on surface and suture. 2 weeks post-surgery review with excellent soft tissue closure. CBCT 6 months later show well consolidated bone graft with good cortical layer, implant was placed into mature grafted area, and restored with individual crown after 3 months. Discussion: In large == defect, bone grafts are more difficult to survive with varying degree of graft resoption, and tissue tension during closure. CGF contain high quantities of growth fator including TGFB1, VEGF, presence of multipotent hempoietic stem cells CD34+, promoting cells proliferation, ostegenic maturation and tissue regeneration. First CGF membrane placement helps to protect sinus membrane. Conclusion: Healing is concerning factor for large defect. Therefore, in this case report, CGF was in cooperated to prevent excessive shrinkage and improve survival of graft and tissue.

REGIONAL SPEAKER SESSION

DATE: 21st September 2018 (Friday) **VENUE: Safir I & II**

Session	Country	Speaker	Affiliation	Title
8.30 - 9.00	Indonesia	Dr Nina Ariani	Indonesian Prosthodontic Society	Tooth Replacement and Nutrition in Older People: Is There a Future for Traditional Removable Prosthodontics?
9.00 - 9.30	Sri Lanka	Dr Indika P Thilakumara	Association of Specialist in Restorative Dentistry Sri Lanka	Role of Prosthodontist in Oral Health Care Delivery, Dental Education, and Research: Sri Lankan Perspective
9.30 - 10.00	China	Prof Dr Yongsheng Zhou	Chinese Prosthodontic Society	How Does Digital Technology Shape the Future Prosthodontics?
10.30 -11.00	Korea	Assoc Prof Dr Jung-Bo Huh	Korean Academy of prosthodontics	Development of Novel Implant Prosthesis System with New Concept for Easy Maintenance
11.00 -11.30	Japan	Assoc Prof Dr Yasunori Ayukawa	Japan Prosthodontic Society	The Influence of Topographical and Chemical Properties of Dental Implants on Soft Tissue Integration
11.30 -12.00	Taiwan	Dr Yang-Khim Siaw	The Academy of prosthetic Dentistry, R.O.C Taiwan	Achieving the Optimal Esthetic Outcome of Anterior Restorations: Traditional or Digital Approach?
2.00 - 2.30	Thailand	Dr Peerapat Kaweewongprasert	Thai Prosthodontics Association	Digital Revolution in Complex Full Arch Implant Rehabilitation: Is the Future Already Here?
2.30 - 3.00	Philippines	Dr Leo Gerald R de Castro	Philippines Prosthodontic Society	Non Surgical with Immediate Provisionalization : The Future of Implant Dentistry
3.00 - 3.30	Singapore	Dr Tan Kian Meng	Prosthodontic Society Singapore	Setting Up the Case for Success-Implant Provisionalization
3.30 - 4.00	Malaysia	Dr Hazlina Abdul Ghani	Malaysian Association for Prosthodontics	The Dilemma of Vertical Ridge Augmentation: The Best and Predictable Technique Available
4.00 - 4.30	India	Dr K Mahendranadh Reddy	Indian Prosthodontics Society	Redesigned Materials in Full Mouth Implant Supported Prosthesis

Dr Nina Ariani

Tooth Replacement and Nutrition in Older People: Is There a Future for Traditional Removable Prosthodontics?

Missing teeth remains a problem for Indonesian with increased number of missing teeth for older age group. Basic Health Survey 2013 reveals average missing teeth for 45-54 age group is six, and an average of 11 missing teeth is experienced by the 55-64 age group, while the above 65 year olds lost 18 teeth on average. The loss of natural teeth can result in aesthetic issues and reduce oral functions including masticatory performance. This reduce in masticatory performance can affect food choices and will likely influence the nutritional status. Furthermore, masticatory function is also one of the most important oral health factors that affect quality of life. It is known that the risk of malnutrition is increased by being edentulous. However, many older people believe that being partially/fully edentulous is a natural part of aging and adapt to that condition. In this presentation, tooth loss and tooth replacement as it relates to masticatory function and nutrition, especially for Indonesian, will be presented. Sociodemographic factors such as age, sex, and education level will also be discussed.

Dr I.P Thilakumara

Role of Prosthodontist in Oral Health Care Delivery, Dental Education, and Research: Sri Lankan Perspective

Being a developing country in the South Asian region, Sri Lankan population of 20 million people enjoys the benefits of free health care delivery and the free education. Advances in health education and health care delivery systems have lead Sri Lanka to gradually shift to an aging population. In contrast to most developed countries, Sri Lanka's demographic transition and population ageing has occurred despite slow economic growth. In this context managing elderly who are going to retain some teeth into their old age will cause specific problems complicated by economic factors which necessitate intervention by the prosthodontist in a different way. In Sri Lanka oral cancer is the most prevalent cancer among males. Rehabilitation of patients who have undergone surgery by prosthetic means is also a challenge faced by the prosthodontist. The presentation will highlight how these challenges are addressed in tertiary care centers where cost is going to be a deciding factor.

Both the undergraduate and the postgraduate curriculum will have to consider expected challenges in the future and prepare the young generation to address them effectively. Collaborative work and sharing resources in the region is discussed in an attempt to enhance the quality of the academic programmes.

Prof Dr Yongsheng Zhou

How Does Digital Technology Shape the Future of Prosthodontics?

Digitization has become important part of the contemporary prosthodontics because most of the prosthodontic procedures can be performed with the digital technologies. Patient management, diagnosis, tooth preparation, making impressions, recording jaw movements, shade selecting, and prosthesis manufacturing, etc, all have become or are becoming digital. CAD-CAM has revolutionized not just the fixed prosthdontics (e.g. all ceramic restoration) but has also been used for the CAD-CAM RPD, Complete denture, implant therapies, maxillofacial prosthesis, esthetic dentistry, virtual articulators and digital face bows, robot articulator, or in the field of training, education and research by the use of virtual patient programs, and others. The digitization and technology in prosthodontics can be used both in the clinical and lab procedures such as the use of CAD-CAM technology, stereolithography, rapid prototyping, and etc. This speech presents various aspects of prosthodontics where digital technology has modified the conventional procedures. The precision, efficiency, accuracy, and its revolutionary changes that the digital technologies bring to prosthodontics will be discussed based on the experiences of Peking University. The usage of digitization and digital prosthodontics has shown a splendid future to all clinicians. The digitization is shaping the future of prosthodontics.

Assoc Prof Dr Jung-Bo Huh

Development of Novel Implant Prosthesis System with New Concept for Easy Maintenance

Implant fixtures have been advanced continuously since the development of implants. The advancements of fixture have been greatly increased the long-term survival rate of implants and simplified implant surgery. But how much improvement has been achieved in the implant prosthetic system? We still use a screw retained or cement retained implant prosthesis that were developed in the 20th century. Although the implant prosthesis has been improved by the advancement of the manufacturing precision and materials, the connection method between a prosthesis and an implant fixture remains unchanged.

There are considerable complications related to prostheses in implant treatment. Complications such as periimplantitis caused by residual cement and screw loosening are the most frequent occurrences in clinical practice at present. Screw retained prosthesis can be retrieved if necessary, but it has limitations in non-esthetic prosthesis and screw holes. In case of cement retained prosthesis, the prosthesis doesn't have retrievability, and may cause periimplantitis by residual cement.

If there are no side effects mentioned above and a prosthetic system can offer easy removal, it is possible to perform efficient maintenance and be clinically convenient. I have developed a freely removable and connectable implant prosthetic system and succeeded in commercialization after five years of researches. It is connected by screw and cement at the first delivery of the implant prosthesis but can be freely removable and connectable without intervention of them during maintenance periods. In this presentation, I will explain about the development process of this new system, the research and commercialization process, and the merits of clinical use. In the future, I expect that the application of the new concept in implant prosthesis will become more active, and I hope that this development will be the first step of implant prosthesis advancement.

Assoc Prof Dr Yasunori Ayukawa

The Influence of Topographical and Chemical Properties of Dental Implants on Soft Tissue Integration

Long-term good prognosis of dental implant is supported by the peri-implant soft tissue (PIS) stability. Periodontal health is endorsed by biologic width with biological barrier characteristics against bacterial stimulation. Although biologic width is reported to be seen even in PIS, little is known about the barrier property. In the present study, cell adhesion characteristics and the nature of biologic width around implant with various surface such as machined (M), sandblasted and acid-etched (SA), and anodized (A) surfaces were elucidated and the differences of barrier property of each surface were investigated. In addition, we recently developed novel surface modification procedure, CaCl2 hydrothermal treatment (CaHT), by which we could obtain good tissue compatibility without altering surface roughness. The effect of CaHT was also investigated. As culture study, rat oral epithelial cells (OECs) and fibroblasts were cultured on M, SA, A or CaHT plates. As a result, the adhesions of OECs were weaker on SA and A plates, than those on M and C plates. Furthermore, Sirius red staining indicated that collagen expressions in fibroblasts on M and CaHT plates were lower than those on other plates. As animal study, maxillary molars of rats were extracted and implants with various surfaces were immediately placed into extraction sockets and PIS was histologically observed. As a result, PIS had similar structure to that around the natural teeth, but epithelium-connective tissue ratio varied among the groups. When horseradish peroxidase (HRP) was applied to peri-implant sulcus as a mimic of bacterial endotoxin, HRP penetration around M and SA was deeper than that around CaHT implants, despite the shortest attachment length of epithelium in CaHT. These results suggest that the strong epithelial seal to the implant surface is a fundamental defense against foreign body stimulation.

Dr Yang-Khim Siaw

Achieving the Optimal Esthetic Outcome of Anterior Restorations: Traditional or Digital Approach?

In recent years, esthetic dentistry has become increasingly popular, especially for maxillary anterior restorations.

The development of novel dental biomaterials and dental CAD/CAM processing technologies are so exciting in our daily dental practice. Evidently, these new technologies have made a significant impact to esthetic dentistry in terms of improving accuracy, replicability, effectiveness and efficiency. However, there remain deficiencies when it comes to high end esthetic requirements. In order to achieve the ultimate optical lifelike restoration, there are aspects where we still rely on the manual application and mastering of traditional stratified porcelain buildup techniques.

This presentation will focus on highlighting the key considerations and factors in clinical cases that combine the application of digital technologies and traditional porcelain layering techniques, from cases of single tooth restoration to multidisciplinary-approach for full mouth rehabilitation.

Dr Peerapat Kaweewongprasert

Digital Revolution in Complex Full Arch Implant Rehabilitation: Is the Future Already Here?

One treatment option for the prosthodontic reconstruction of a patient with a terminal dentition is an immediately functional full arch implant supported fixed prosthesis. Typically, after surgical extractions, alveoloplasty, and implant placement, the existing complete denture prosthesis is converted intra-orally to an immediate implant supported interim prosthesis. This conventional technique requires well-experienced team members including dental surgeon, prosthodontist, dental technician, and a significant amount of time for the surgical, prosthetic and laboratory procedures. To improve the overall treatment outcome, digital technology such as a cone beam-computed tomography (CBCT), computer-aided design and computer-aided manufacturing (CAD/CAM) technology, 3D printing technology, facial scanner, and computer-guided implant surgical planning can be utilized. Utilizing these latest digital technologies assisting full arch implant rehabilitation resulted in a predictable treatment with less morbidity, less laboratory and clinical chair-time, and a substantial increase in patient satisfaction.

Dr Leo Gerald R de Castro

Non Surgical with Immediate Provisionalization : The Future of Implant Dentistry

Inception of osseointegration has rapidly led to the use of dental implants over the past few decades. Because of the increasing demand for immediate esthetics, clinicians pushed the envelop further by delivering restorations right after implant placement. Implant complications are often an inadvertent sequela of improper diagnosis, treatment planning, surgical method, and placement. This can be overcome by using surgical guides for implant positioning. Although conventionally made surgical guides are used, the clinical outcome is often unpredictable, and even if the implants are well placed, the location and deviation of the implants may not meet the optimal prosthodontic requirements. Conventional techniques currently used for implant placement lack sufficient precision and are usually accomplished by opening flap procedures.

Nowadays computer-guided flapless surgery for implant placement using stereolithographic templates is gaining popularity among clinicians and patients. The advantages of this surgical protocol are its minimally invasive nature, accuracy of implant placement, predictability, less post-surgical discomfort and reduced time required for definitive rehabilitation. The introduction of digital planning programs has made it possible to predetermine the precise three-dimensional position of the planned implant before the actual implant insertion, and to transfer this position to the surgical site. Thus, the restoration can be fabricated before surgery and can be placed into the patient's mouth immediately after surgery. Treatment planned in this way is fast, minimally invasive, and most importantly, predictable.

Dr Tan Kian Meng

Setting Up the Case for Success-Implant Provisionalization

According to the Glossary of Prosthodontic Terms, provisional prosthesis is defined as dental prosthesis designed to enhance esthetics, stabilization and/or function for a limited period of time, after which it is to be replaced by a definitive dental prosthesis. Often such prostheses are used to assist in determination of the therapeutic effectiveness of a specific treatment plan or the form and function of the planned for definitive prosthesis. For these reasons, provisional prostheses have always been an integral part of conventional fixed prosthodontics. In implant prosthodontics, however, the use of provisional prosthesis has often been overlooked. In this presentation, the rationales for provisionalization on implants will be discussed.

Dr Hazlina Abdul Ghani

The Dilemma of Vertical Ridge Augmentation: The Best and Predictable Technique Available

Nowadays, restoring the distal-end edentulous mandible is a common clinical procedure to regain patient's masticatory function and aesthetics. The edentulous distal-end areas are often rehabilitated through the means of removable partial dentures (RPD). Unfortunately, these prostheses are often found by the patient to be unstable which lead to patients' discomfort.

Implant-supported fixed prostheses is another treatment option modality, but placement of an implant of a sufficient length is always compromised by critical anatomical structures such as inferior alveolar nerve due to insufficient ridge height. As a viable option, short implants have been recommended but with limitation as the available bone above the inferior alveolar nerve is only around 5 to 7 millimeters. Another alternative option is transposing the inferior alveolar nerve, but the procedure is commonly associated with a certain degree of permanent loss of nerve sensitivity.

To overcome the limitations from the existing options, the ideal approach would be to vertically augment the ridge to facilitate the placement of an implant of an ideal length. Several different vertical ridge augmentation techniques such as guided bone regeneration procedures, onlay bone grafting, inter-positional bone graft, and alveolar distraction osteogenesis have been used, but with a significantly high number of complications and failure rate. Therefore, this procedure is questionable and not preferred by many clinicians.

This talk will succinctly review few techniques which is commonly used in clinical practice for vertical bone augmentation procedures. It will also share the 3-staged vertical ridge augmentation procedures which is found to be a predictable technique for osseointegrated implants, and most importantly, that can result with an implant in a prosthodontically favourable position as proposed by Ashman Implant/Perio Department, College of Dentistry, New York University.

Dr K Mahendranadh Reddy

Redesigned Materials in Full Mouth Implant Supported Prosthesis

Implant supported restorations is most accepted treatment modality restoring edentulous spaces. Restoring partial tooth loss and complete edentulous arches faces a different challenges. Long term success of Complete edentulous situations meticulous planned considering, Consequences of tooth loos, amount of bone resorption, bone availability, aesthetic challenges, Prosthesis weight, and functional load distributing to underlying implants and bone.

Many materials and designs of prosthesis are in use for restorations of full arch implant supported prothesis. The traditional materials like nobel metals, base metals alloys, both casted and milled forms were used as reinforcing structures. Ceramics, composites, and Acrylics were used for layering to produce hybrid prosthesis. Development of the newer materials and present day polymer technology has made possible to reach our goals achievable with ease and producing consistent and predictable prosthetic success. Development of primers and bonding agents to enhance the adhesion between various materials has greatly changed the performance of these material when used in combination producing hybrid prosthesis.

I will discuss the Poly Ether Ether Ketone (PEEK) based polymer material as skeleton and Composite for aesthetic and functional layering. The long term success and methods of fabrication of such prothesis will be presented. Processing these materials could use traditional lost wax moulding technique and also digital work flow (CAD CAM) method making it compatible with modern technology bringing in consistency and predictability in prosthesis fabrication.

Bio-Hpp is a PEEK based reinforced frame work material from Bredent, with excellent physical and mechanical properties desired and matched closely to the bone helping the loads generated by functional prosthesis being distributed in most favourable manner to underlying bone through the integrated implants. Challenge has always been adhesion between laying composite, Reinforcing skeleton, and components that fixes to implants. Various techniques will be presented which are proven with long term success.

The clinical case presentation of this kind of prosthesis will certainly conclude that the newer material like Bio-Hpp and modern day ceramic filled composite in combination of newer generation primers and adhesives will make full arch implant supported prosthesis very successful and also protect the underlying implants and the tissues remaining.

ASIAN COUNTRY SPEAKER SESSION (NON-AAP COUNTRY MEMBER)

DATE: 21st September 2018 (Friday) **VENUE: Mahkota II**

Session	Country	Speaker	Affiliation	Title
4.15 - 4.45	Bangladesh	Prof Dr Md Mahbubur Rahman	Department of Prosthodontics, Faculty of Dentistry, Bangabandhu Sheikh Mujib Medical University	Prosthodontic Approach in the Management of Severely Worn Teeth
4.45 - 5.15	Cambodia	Dr Tieng Chhnoeum	Dental Implant Society of Cambodia	Using Digital Application for Aesthetic Restoration: Make It Simple

Prof Dr Md Mahbubur Rahman

Prosthodontic Approach in the Management of Severely Worn Teeth

The abrasion, attrition and erosion are the common causes of worn teeth. It changes the location of intercuspal position (ICP). In general when the ICP is lost, it may develop reduced vertical dimension of occlusion. In regards to harmonious relation of condyle in TMJ and muscle function; it is obligatory for the clinician to reestablish it. However the generalized attrition does not always manifest the loss of vertical dimension of occlusion (VDO). Sometimes the eruption of teeth and the alveolar bone growth with adaptation compensates the loss of tooth structure and maintains the VDO. Therefore, the long term clinical success demands correct assessment of occlusal vertical dimension and inter-occlusal rest space in regards to centric relation before final prosthesis. The clinician uses removable occlusal splints in upper arch of his patient and restores teeth with composite and glass ionomer in lower arch with estimated increased vertical dimension of occlusion as interim procedure for three months to observe any symptoms in TMJ and muscle function.

Dr Tieng Chhnoeum

Using Digital Application for Aesthetic Restoration: Make It Simple

Restorative dentistry is moving fast forward according to development of updated technology in new decade. There are many digital applications developed to facilitate diagnosis and treatment planning for aesthetic dentistry. Some software programs are very useful; it could be said that digital dentistry would never become what it is now a day without those advance digital technologies. 3D professional software programs are very important for full smile design and CAD/CAM technology. However, it is not advisable that every dentist should own this digital license for some reasons. Beside its increasing popularity, 2D application created for smart phone and tablet for aesthetic analysis and treatment planning have some limitation which need to be improved.

DATE: 21st September 2018 (Friday) **VENUE: Safir I & II**

Session	Country	Speaker	Affiliation	Title
4.30 - 5.00	Pakistan	Prof Dr Azad Ali Azad	Pakistan Prosthodontics Association	Missing Maxillary Lateral Incisors – A Clinical Dilemma for the Treating Team

Prof Dr Azad Ali Azad

Missing Maxillary Lateral Incisors - A Clinical Dilemma for the Treating Team

There is scientific evidence suggesting that maxillary lateral incisors are one of the most often congenitally missing teeth. Congenital absence leads to tilting, drifting, rotation and supra-occlusion of neighboring and opposing teeth. These changes affect the esthetics, periodontal health, caries index and orthodontic/Prosthodontic treatment outcomes.

Teamwork is the hallmark of present day dentistry and shall stay there for long as more and more specialties are emerging within dentistry. In this presentation, harmony of teamwork in treatment planning, sequencing the steps of treatment and reaching a desired goal shall be discussed in detail. Role of veneers, ceramic crowns, minimal preparation FPDs and dental implants along with short case reports shall also be incorporated and this is supposed to be beneficial to students, general dentists and specialists from Prosthodontics, orthodontics and restorative dentistry.