ORAL PRESENTATION

Impact of Red-Lime and White-Lime Areca Nuts on Oral Cell Lines: Cytotoxicity and Effects on Fibronectin and Type I Collagen Expression

柯政全 Edward Chengchuan KO[1,2,3,4*],Chia-Chen Wu[1],Yu-Hsun Kao [1,2],Yong-Deok Kim[5],Chun-Chan Ting[1,6],Hangshen Chen[1,3],Feng-Cheng Wu[1],Wen-liang Lo [7],Jiiang-Huei Jeng[3,8],Yao-Chang Chen[1,9]

[1]Liberty Lab of Tissue Engineering Takao, Kaohsiung, Taiwan

[2]Division of Oral and Maxillofacial Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

[3]School of Dentistry, College of Dental Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

[4]Institute of Precise Medicine, College of Medicine, National Sun Yat-sen University, Kaohsiung, Taiwan

[5]Department of Oral and Maxillofacial Surgery School of Dentistry and Dental Research Institute, and Institute of Translational Dental Sciences, Pusan National University, Yangsan, Korea

[6]School of Dentistry, College of Medicine, National Cheng Kung University, Tainan, Taiwan

[7]College of Dentistry, National Yang Ming Chiao Tung University, Taipei, Taiwan

[8]School of Dentistry, College of Medicine, National Taiwan University, Taipei, Taiwan

[9]Department of Laboratory Medicine, National Taiwan University Hospital, Taipei, Taiwan

Introduction: Chewing areca nut is linked to oral cancer risk. In Taiwan, there are two significant types of betel nut products available on the market; one is red-lime betel nut, and the other is white-lime betel nut.

Objectives: This study explores the effects of red-lime and white-lime areca nut extracts on oral cell lines, focusing on their cytotoxicity and influence on fibronectin and Type I collagen expression, which are keys to oral tissue integrity and cancer development.

Method: Four oral cell lines—human gingival fibroblasts, tongue squamous cell carcinoma cells, human periodontal ligament fibroblasts, and human fetal osteoblasts—were treated with red-lime and white-lime areca nut extracts. Cytotoxicity assays and Western Blotting were used to assess cell viability and protein expression.

Results: The extracts showed variable cytotoxic effects, with lower concentrations sometimes promoting growth and higher concentrations inhibiting it. Red-lime areca nut increased fibronectin and Type I collagen in periodontal ligament fibroblasts but reduced both in fetal osteoblasts. White-lime extract generally elevated fibronectin and decreased Type I collagen across cell lines. Differences in protein expression patterns were observed, indicating cell type-specific responses.

Conclusion: Our study reveals a nuanced, concentration-dependent impact of areca nut extracts on oral cells, with significant variability in cytotoxicity and changes in fibronectin and Type I collagen expression. These findings underscore the importance of further research into the molecular mechanisms of these effects and their implications for oral health and cancer prevention.

Keywords: betel nut, fibroblast, periodontal ligament, osteocyte, squamous cell carcinoma, cytotoxicity, fibronectin

Microbiological Evaluation for Root Canal of Teeth with Endodontic Infection

Li-Wan Lee1,2*,Hsin-Chieh Lin1,2,Yi-Chung Chen1

[1]Dentway international dental hospital
[2]Excellent dental clinic

Introduction: Knowledge of microbial location and organization within the root canal system is important for understanding the disease process and establishing effective antimicrobial therapeutic strategies. This study examined the bacterial species in root canal of teeth with pulpal infection. Antimicrobial susceptibility tests were performed to assess whether these identified bacterial species were susceptible to specific kinds of antibiotics.

Objectives: This study was provided the data on bacteria from endodontically infected teeth to identify bacteria species and build antimicrobial sensitivity test, and todedicate an accurately diagnostic and therapeutic reference domestically.

Method: Selective media plating and biochemical tests were used first to detect the bacterial species in samples taken from the root canals of 60 teeth with apical periodontitis, periodontal abscess, cellulitis, myositis etc. The isolated bacterial species were further confirmed by matrix-assisted laser desorption ionization-time of flight mass spectrometry.

Results: Concomitant presence of two (32 teeth) or three species (18 teeth) of bacteria in 50 (83.3%) out of 60 tested teeth. Of a total of 118 bacterial isolates (83 anaerobes- included microaerophil and 35 aerobes), Prophyromonas endodontalis, Treponema denticola, Fusobacterium nucleatum, Dialisler invisus, and Bacteroides were predominant species.

Conclusion: Mixed infection with accompany presence two or three of bacteria species. Anaerobes were occupied a major bacterial species, augmentin, cepamoxicillin,/clavulanate, and cefoxitin were most effective durg for periodontitis or cellulitis associated with endodontic infection with obligate or facultative anaerobic pathogen.

Keywords: Bacterial identify, root canal of teeth with pulpal infection, antimicrobial susceptibililty test

ORAL PRESENTATION

89

Peri-implant Clinical and Radiographic Alterations following Immediate Placement and Loading of Dental Implants Using Socket Shield Approach with Un-demineralized Tooth Graft versus Xenograft: A Randomized Controlled Clinical Trial.

Walid[1*]

[1]Division of Periodontology, Department of periodontology, Oral Medicine, Oral Diagnosis and Dental Radiology, Faculty of Oral and Dental Medicine, Kafrelsheikh University, Kafrelsheikh, Egypt

Introduction: Immediate implant insertion with immediate loading reported improves esthetics and psychosocial impacts. While midfacial mucosal recession, papillary recession and facial plate resorption deteriorates the esthetic outcomes of this protocol. Socket shield approach (SSA) was developed to maintain facial root portion and preserve the periodontal ligament and its vascularity that nourishes the tooth's bundle bone. Palatal implant insertion leaving at least 2 mm jumping gap between the fixture and the facial shield that enhances the future buccal bone thickness. This jumping gap could be grafted with bone substitutes or left ungrafted. Autogenous tooth graft exhibits superior osteoinductive and osteoconductive capacity with high biocompatibility and comparable physico-chemical characteristics to autogenous bone.

Objectives: The current study was conducted to assess the effectiveness of autogenous tooth graft prepared from palatally extracted root portion versus xenograft for the augmentation of the shield/fixture jumping gap around immediately placed implant using socket shield technique with immediate loading in the maxillary esthetic zone.

Method: The socket shield was prepared and the palatal root piece was removed followed by palatal implant placement and grafting the jumping gap with xenograft in group II, and autogenous tooth graft in group III while group I was left ungrafted.

Results: The current study demonstrated improved clinical (pink esthetic score, implant stability, midfacial mucosal alterations) and radiographic (bone width, level and density) outcomes of group II and III over group I.

Conclusion: The findings of the current trial provided clinical and radiographic evidence that Autogenous tooth bone could be an acceptable bone substitute.

Keywords: Socket Shield Approach, Tooth Graft, Xenograft, Immediate Implant Placement and Loading, Dental Implants

Redefining Efficiency and Positioning of Implant Fixtures Through Novel Socket-And-Bone-Oriented Immediate Implantation Technique with Guided Bone Regeneration (GBR) and Various Platelet Concentrates

Eric Lin[*]

[1]Grater Shine Dental Clinic

Introduction: Dental implants aim to replace natural teeth with artificial teeth that resemble and work in the exact manner as the original. Conventional treatment methods involve pairing delayed post-extraction placement with a thin, long implant fixture that reaches the apical with goals of eliminating associated infective processes and engaging maximum osteoblastic activity that is theoretically beneficial for osseointegration.

Objectives: However, this method is susceptible to bone resorption, gum recession, and potential infections, which can result in loose implants and mispositioning. Procedures to salvage failed late dental implants are even more difficult and costly to resolve. Through the novel approach of socket-and-bone-oriented immediate implantation, satisfactory aesthetic outcomes are achieved as a result of optimal healing, osseointegration, and precise positioning of implant fixtures.

Method: This is achieved through the pairing of the immediate implant placement of shorter and wider implant fixtures with guided bone regeneration (GBR) and Platelet Concentrates – concentrated growth factor (CGF), platelet-rich plasma (PRP), and platelet-rich fibrin (PRF) – upon tooth extraction.

Results: The success of this procedure is exemplified through three unique case reports collected regarding the upper anterior regions. With continual expansion upon the socket-and-bone-oriented immediate implant placement technique, there exists immense potential in redefining future implantation treatments through significant reduction of procedural duration and efficient angular and aesthetic fixture positioning.

Conclusion: The novel socket and bone oriented immediate implant placement following the tooth extractions pushes the frontiers known in implantology , satisfying the crucial aspects of optimal tooth restoration with precision positioning ,aesthetics ,and enhanced healing

Keywords: Immediate Implantation, Guided Bone Regeneration, Platelet Concentrates

Combination of Fluoride with Casein and Lactoferrin In Enhancing Calcium Levels and Tooth Hardness

Lanny[1*]

[1]Division of Postgraduate Program, Department of Oral Health, Kemenkes Poltekkes Semarang, Indonesia

Introduction: Dental caries is a prevalent oral disease in Indonesia with a relatively high incidence rate despite ongoing interventions. Consequently, there is a need to explore innovative strategies to mitigate this issue, specifically by developing dental preparations containing studied materials to enhance remineralization. Among the active compounds recognized for their tooth-strengthening properties are fluoride, casein, and lactoferrin, each operating through distinct mechanisms.

Objectives: To formulate a gel-based delivery system that incorporates fluoride, casein, and lactoferrin, followed by in vivo assessments in Wistar mice over seven and 14-day periods, focusing on changes in enamel hardness and calcium levels.

Method: Research design is a quasi-experimental approach involving preparation of four distinct gel formulations with varying dosage combinations as follow active ingredients fluoride + casein; fluoride + lactoferrin; fluoride + casein + lactoferrin, and a placebo group. In vitro trial measurements of enamel hardness conducted using a microhardness tester and calcium levels determined through the AAS method. Statistical analysis assessed the gel's effectiveness regarding its impact on enamel hardness and calcium levels.

Results: The differences between groups are displayed, ANOVA test showed the differences in calcium levels and tooth hardness between groups with the highest average Ca levels in the F + casein gel group. Casein and fluoride play roles in the remineralization process by binding the calcium so that it can increase the amount of calcium and increase tooth hardness.

Conclusion: Applying a gel containing fluoride and casein for seven days has been shown to elevate calcium levels and enhance tooth

Keywords: Calcium levels, Tooth Hardness, Fluoride, Casein, Lactoferrin

Employing Anti-Vet Enamel Cleansing and Resin Infiltration Techniques for the Management of Brown and White Discolorations in Anterior Teeth: A case series study

Maxstein[1*], Tong Wah Lim[1]

[1]Restorative Dental Sciences Department, Faculty of Dentistry, The University of Hong Kong

Introduction: In today's dental practice, aesthetic dentistry has emerged as a critical aspect. Patients globally are persistently pursuing visually appealing smiles. Dental practitioners are now experiencing heightened demand for inconspicuous aesthetic treatment, employing minimally invasive techniques while preserving natural dental tissues. Leveraging the state-of-the-art restorative materials and new treatment approaches enable dental professionals to craft natural smiles while maintaining functionality, biological harmony, and aesthetic appeal.

Objectives: The aim of this case series study is to delineate and explore the management of mild to severe enamel discolorations in anterior teeth utilizing Anti-Vet enamel cleansing and resin infiltration techniques, which are minimally invasive approaches in contemporary dental practice.

Method: Six middle-aged patients, free from any systemic diseases and presenting with enamel discoloration on their anterior teeth, were selected for this study. Three patients with brown enamel discoloration were assigned to undergo treatment using the Anti-Vet enamel cleansing kit, while the remaining three patients with white spot enamel discoloration were treated using the resin infiltration technique. Postoperative outcomes were evaluated immediately following the procedure via photographic documentation. Tooth sensitivity was assessed immediately post-procedure and after a three-month follow-up, while patient satisfaction was measured using a 5-point Likert scale.

Results: Based on the findings of this study, both techniques are deemed promising minimally invasive solutions for managing discolored enamel.

Conclusion: The success of such treatment approaches hinges on accurate diagnosis and a comprehensive understanding of the discoloration's etiology.

Keywords: Resin Infiltration, AntiVet, Enamel Discoloration, Minimal invasive, Aesthetics

Performance of Chatbots in Answering the Restorative Dentistry Questions of Dental Licensing Examinations

Walter[*],Reinhard Chau,Khaing Myat Thu,Richard Hsung

[1]The University of Hong Kong

Introduction: Chatbots, belonging to Generative artificial intelligence (GenAI), have vast potential applications in healthcare and education. However, it remains unclear how proficient different chatbots are in interpreting written questions and providing accurate answers in the field of restorative dentistry.

Objectives: This study aims to investigate the accuracy of chatbots in answering restorative dentistry questions from dental licensing examinations.

Method: A total of 191 multiple-choice questions in restorative dentistry were obtained from question books for the US (n=80) and the UK (n=111) dental licensing examinations. These questions were input into ChatGPT4.0, Gemini, Claude-2, and Llama-2. The passing rates of the US and UK dental examinations were 75.0% and 50.0%, respectively. The performance of the chatbots in individual examinations was analyzed.

Results: ChatGPT 4.0 correctly answered 73.8% (failed; n=59) and 59.5% (passed; n=66) of questions from the US and UK dental licensing examinations, respectively. Gemini scored 57.5% (failed; n=46) and 28.8% (failed; n=32) on the respective exams. Claude-2 scored 57.5% (failed; n=48) and 28.8% (failed; n=32), while Llama-2 scored 46.3% (failed; n=37) and 11.7% (failed; n=13). Only ChatGPT 4.0 passed the restorative dentistry section of the UK written dental licensing examination, while Gemini, Claude-2, and Llama-2 failed both dental licensing examinations.

Conclusion: Although chatbots have demonstrated the ability to pass dental licensing examinations, their performance in restorative dentistry is still inferior. Further improvements are necessary. Differences in chatbot performance were observed in this study. The use of GenAI in dentistry will have significant implications for dentist-patient communication and the training of dental professionals.

Keywords: Artificial intelligence; Dental education; Machine learning; Restorative Dentistry

ORAL PRESENTATION

94

Accessibility and Influential Factors on Dental Care Access before and during the COVID-19 Epidemic in Indonesia: Insights from National Health Insurance Claims Database

Balqis Istiqomah[1*]

[1]International Ph.D. Program in Biotech and Healthcare Management, College of Management, Taipei Medical University, Taiwan

Introduction: According to the recent Indonesian Basic Health Research in 2018, the national prevalence of oral health disease was 57.6%. However, merely 10.2% of these cases received treatment from dental professionals. Many Indonesians, particularly those living in rural areas, may not have access to a nearby dental clinic or may not be able to afford the cost of transportation to reach one.

Objectives: This study aimed to evaluate patients' access to primary dental care and its related influencing factors before and during the COVID-19 pandemic based on INHI data.

Method: This cross-sectional study utilized INHI claim datasets from 2019 to 2020, comprising a sample of 2,200,960 members, which represented 1% of the total INHI membership. Logistic regression analysis, with a 95% confidence interval, was conducted to identify the factors influencing access to primary dental care both before and during the COVID-19 pandemic.

Results: Primary dental care access accounted for 2.3% of the total INHI membership in 2019. However, amid the COVID-19 pandemic, primary dental care access slightly decreased to 1.6% in 2020. The results of logistic regression analysis revealed that INHI members with higher access rates included females, children, married individuals, premium payers, wage workers, and residents of the Java-Bali region.

Conclusion: The access rate of primary dental care in Indonesia were extremely low compared to neighbouring countries. Individuals with lower social support and those residing in rural or remote areas experienced notably reduced access rates. Policymakers should give priority to enhancing healthcare infrastructure services and deploying dental professionals to address these disparities.

Keywords: dental care, COVID-19 Epidemic, Indonesia, National Health Insurance Claims Database

ORAL PRESENTATION

95

Use of whitening toothpastes in daily life and its impact on the dental hard tissue

Young Seok[1*],Hye-Jung Yoon[2],Gehoon Chung,Soyeon Kim[1],Yong-Shin Hong[1],Van Mai Truong[4]

[1]Department of Oral Anatomy, Department of Integrated Dentistry, School of Dentistry and Dental Research Institute, Seoul National University, Seoul, South Korea

[2]Department of Oral Pathology, School of Dentistry and Dental Research Institute, Seoul National University. Seoul, South Korea

[3]Department of Oral Physiology, School of Dentistry and Dental Research Institute, Seoul National University. Seoul, South Korea

[4]Faculty of Odonto-Stomatology, School of Medicine, Vietnam National University, Ho Chi Minh City, Vietnam.

Introduction: Research on whitening toothpaste is increasing, and there is growing interest in their impact on dental hard tissue.

Objectives: To explore the latest trends in research on whitening toothpaste especially in the impact on the dental hard tissue in regard to the whiteining efficacy and mechanism and present the issues and future perspectives of these studies.

Method: Initial pubmed search was done, and meticulous manual review was followed and investigated thoroughly.

Results: A total of papers initially retrieved from Pubmed search, and 52 final papers were selected and analyzed through manual review and analyzed.

Conclusion: Research on whitening toothpaste is continually increasing, and many studies have demonstrated their efficacy. Recently, there has been a shift in focus towards investigating the impact of whitening toothpaste on dental hard tissue, raising concerns about their safety. Within the limitations of this investigation, the previous literatures tend to consider whitening toothpaste as a single entity despite having various active ingredients, often compared dichotomously with regular toothpaste. Additionally, most studies utilize commercially available toothpaste, leading to a lack of direct comparison between ingredients under standardized conditions and overlooking the effects of unrecognized minor components. Further research should address these considerations in order to advance our understanding in this area and giving apporpriate information to people or patients.

Keywords: "Whitening toothpaste", "Dental Hard Tissue", "Color",

Effects of Denture Cleaning Methods on Microbial-based Index and Denture Cleanliness: A Randomized Clinical Trial

Tong Wah[1*], Shi Huang[2], Michael Francis Burrow[1], Colman McGrath[2]

[1]Division of Restorative Dental Sciences, Faculty of Dentistry, The University of Hong Kong, Hong Kong SAR.

[2]Division of Applied Oral Sciences and Community Dental Care, Faculty of Dentistry, The University of Hong Kong, Hong Kong SAR.

Introduction: Removable dentures can harbor opportunistic pathogens, emphasizing the need for effective denture hygiene interventions to eliminate these pathogens in community-dwelling elders.

Objectives: To compare the efficacy of test and control denture cleaning interventions in reducing opportunistic pathogens and improving denture cleanliness, as measured by the Microbial Index of Pathogenic Bacteria (MIP) and percentage plaque area coverage (PPC), respectively.

Method: A total of 56 community-dwelling elders were block-randomized into two denture cleaning groups: i) intervention group (ultrasonic cleaner combined with immersion in denture cleanser solution), and ii) control group (immersion in denture cleanser solution followed by conventional brushing). MIP and denture cleanliness were assessed at baseline and after three months. MIPs were determined based on the sum of the relative abundance of pathogenic bacteria in a microbiome after 2bRAD-M metagenomic sequencing. PPC was evaluated using a semi-automated planimetric assessment.

Results: Both MIP and PPC were significantly reduced in the intervention group (P<0.05), while no significant changes were observed in the control group. There were no significant differences in changes in MIP between the two groups (P=0.497). The intervention group demonstrated a significantly greater reduction in plaque area coverage compared to the control group (P<0.001). Analysis of Covariance revealed that the intervention (P=0.04) and MIP at baseline (P<0.001) were the key factors associated with changes in MIP, after accounting for sociodemographic and clinical factors.

Conclusion: The study results indicate that the intervention group was significantly more effective than the control group in reducing pathogenic microbiome and plaque coverage among community-dwelling elders.

Keywords: Denture cleanser, Microbial-based index, Pathogens, Plaque, Ultrasonic

Logopedic Voice Treatment After Using Cu Sil Denture In Ectodermal Dysplasia

Gyzca[1*] ,Sulistiawati, Diani[1]

[1]Pediatric Dentistry, Universitas Gadjah Mada

Introduction: Ectodermal dysplasia absence of permanent teeth, alveolar deficienc, affected maxillofacial skeleton. Craniofacial development occurs, the vocal tract, jaws, and teeth change in parallel with stages of speech development, from babbling to adult phonation. Cu Sil Denture is recommended for children with tooth loss to reduce tooth mobility, bone resorption.These holes are surrounded by stable rubber (silicone rubber) that encircles the remaining healthy dental serviks.

Objectives: A 13-year-old girl with ED. jaw relationships with positive dental overjet has also allowed the development of labiodental fricatives including [f] and [v] .

Method: The recording of speech was directly conducted in a soundproof room through sound recorder program using flat microphones and sound processing mixer. Then, the dominant sound frequency (Hz) and the display of the spectrum patterns of the sound frequency was measured using Cool Edit Pro 2.0 and Excel software

Results: Cu sil denture could be normal speech, modify the growth pattern, TMJ function, improve the esthetics.

Conclusion: The rehabilitation of as early as feasible by the insertion of a permanent prosthesis at the end of growth. Treatment planning, timing to each individual's growth periods are decisive for a successful treatment.

Keywords: Ectodermal Dysplasia ; Oligodontia ; Logopedic ; Speech ; Cu sil Denture

Investigation on fracture toughness of all-ceramic resin bonded bridges of different parameters connectors

Mas Linda[1*]

[1]Centre of Restorative Dentistry Studies, Faculty of Dentistry, Universiti Technologi MARA, Malaysia

[2]Faculty of Biomedical Engineering, Hungkuang University, Taiwan

[3]Division of Restorative Dental Sciences, Faculty of Dentistry, The University of Hong Kong

[4]College of Engineering, Universiti Technologi MARA, Malaysia

Introduction: All-ceramic resin bonded bridge (RBB) is a minimally invasive option to replace a missing tooth with excellent aesthetics. The toughness of silica-based ceramics is contentious and connector component is the weakest part and prone to fracture.

Objectives: The study aimed to evaluate the fracture toughness of lithium disilicate (LD) RBB with various connector dimensions.

Method: 20 extracted human incisal teeth were used as the abutment. Cantilever RBB were fabricated from LD (n:20) with 4 different connector dimensions (n:5). RBB were cemented and tested with load to fracture. The force at fracture and mode of failure was recorded. Results were statistically analyzed with one-way ANOVA. Type of fracture failure were observed and classified as favorable and unfavorable. For the FEA, a 3D models of cemented RBB with different dimensions of the connector was established. Simulation load of 100N, 150N and 200N were tested and the stress and strain were recorded.

Results: FEA findings revealed that the areas of maximum stress altered with different connector dimensions. In vitro testing showed that the highest and lowest fracture toughness was in trapezoidal shape with different volume, 180+/-83N and 116+/-25N respectively. Failures were 100% favorable. There were no significant differences in fracture toughness of the material with different dimensions. However, a pattern was observed that a wider base of the connector (trapezoidal) exhibited higher fracture resistance compared to rectangular shape even with half of the connector volume.

Conclusion: Toughness of the connector is influenced by the width of the base but not the height of the connector.

Keywords: resin bonded bridge, all ceramic, lithium disilicate, fracture toughness

POSTER PRESENTATION

A novel LRP6 variant associated with nonsyndromic tooth agenesis in the Thai family

NARIN[1*], Thantrira Porntaveetus[1]

[1]Center of Excellence in Genomics and Precision Dentistry, Department of Physiology, Faculty of Dentistry, Chulalongkorn University, Bangkok 10330, Thailand

Introduction: Tooth agenesis (TA), one of the most common congenital dental anomaly, exhibits varying prevalence rates (4.4–13.4%) among populations and ethnic groups. Genetic alterations are recognized as a common cause of TA.

Objectives: To investigate non-syndromic tooth agenesis (NSTA) in a Thai family by examining orodental characteristics and elucidating its genetic cause.

Method: The proband and family members underwent physical and oral examinations. DNA samples were subjected for exome sequencing, followed by Sanger sequencing. Pathogenicity assessment employed various tools, including FATHMM-MKL, varSEAK, and Human Splicing Finder. The proband's RNA underwent RT-qPCR to confirm the exon-skipping effect of a novel intronic variant.

Results: The proband exhibited congenital missing permanent teeth, retained deciduous teeth, microdontia, and hypotaurodontism, with no observed ectodermal organ anomalies in the family. Exome analysis uncovered a novel heterozygous intronic missense variant, c.845-1G>A, in the LRP6 gene. This variant was confirmed in the proband and her unaffected father but was absent in the unaffected mother. The phenotypic variability of the LRP6 variant may be attributed to its incomplete penetrance. Computational analysis suggested that the variant is disease-causing, impacting splicing and resulting in exon skipping. RT-qPCR and Sanger sequencing confirmed exon 5 skipping in the mutant allele of the proband.

Conclusion: This study, for the first time, identified a novel LRP6 variant associated with NSTA in a Thai family, expanding the genotypic spectrum of LRP6. This finding provides new insights into the genetic diversity associated with NSTA and contributes to the broader understanding of LRP6-related dental anomalies.

Keywords: Oligodontia, splicing, Wnt signaling.

Effect of Hainosan on tissue repair cytokine secretion from Porphyromonas gingivalis - treated murine fibroblasts.

masaaki[1*],masayo taira,makoto aizawa

[1]Department of Bacteriology, Nagoya City University, Graduate School of Medical Sciences, Nagoya, Japan

[2] JPS Pharmaceutical co. Ltd., Yokohama, Japan

Introduction: Periodontal disease is a chronic infection caused by periodontal disease-related bacteria such as Porphyromonas gingivalis. It stimulates fibroblasts of gingival tissue cells and causes periodontal tissue injury. Hainosan is a traditional Japanese and Chinese medicine formula consisting of Aurantii Fructus Immaturus, Paeoniae Radix, and Platycodi Radix for purulent diseases including gingivitis. However, the detailed mode of action has been still unknown.

Objectives: In this study, we investigated the effect of Hainosan and its constituents on the production of tissue repair cytokines from murine fibroblasts stimulated with P. gingivalis.

Method: Hainosan and its constituent crude drugs were used after preparing an extract obtained by extracting the crude drug with hot water. Mouse fibroblasts (RCB2767) stimulated with a heat-killed P. gingivalis (JCM12257) culture were added to a MEM medium with Hainosan and its constituent crude drugs and cultured at 37 $^{\circ}$C in a 5% CO_2 environment for 24 hours. After that, tissue repair cytokines (TGF-beta, VEGF, GM-CSF, MCP-1, MMP-9) in the medium were measured by ELISA.

Results: When fibroblasts were cultured in a medium with heat-killed bacteria, the concentrations of cytokine in the medium were higher than those in the control group. They were also significantly upregulated in a concentration-dependent manner by adding Hainosan extract. Regarding constitutive crude drugs, a significant increase in cytokine production was observed when Paeoniae Radix, and Platycodi Radix extracts were added.

Conclusion: We suggest that Hainosan is useful for the treatment for periodontal disease from the perspective of tissue repair.

Keywords: Hainosan, Porphyromonas gingivalis, fibroblast, tissue repair cytokine

P3

Evaluation of bone regeneration in vivo of DPSC-sEV scaffold with optimal sEV isolation method

李柏叡 [1],Yu-Ting Chien[1],Wei-Hao Cheng[1],Chia-Yi Hung[1],Ya-Hui Chan[1],Sheng-Wei Feng[2]

[1]School of Dentistry, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan

[2]Department of Dentistry, Division of Prosthodontics, Taipei Medical University Hospital, Taipei, Taiwan

Introduction: In surgical dentistry, the role of bone regeneration is imperative in procedures such as enhancing tooth and implant stability, facilitating ridge augmentation, and enabling sinus lifting. Concomitantly, ongoing research endeavors are directed toward the synthesis of advanced biomaterials capable of promoting new bone formation. The therapeutic potential of mesenchymal stem cell-derived small extracellular vesicles (MSC-sEVs), particularly in dental pulp-derived stem cells (DPSC), has exhibited notable regenerative potential. In addition, different isolation methods of MSC-EVs were crucial in affecting EV quality and cellular action pathways.

Objectives: Our study aimed to determine the optimal isolation methods comparing ultracentrifugation (UC) and ultrafiltration combined with size exclusion chromatography (SEC) of DPSC-sEVs, with a focus on the impacts of their EVs osteogenesis ability in vivo.

Method: The animal experiment consisted of 40 rats. Two parallel calvarial defects were created on each rats. The regenerative materials were placed randomly into the defects. In the following 4 and 8 weeks, the rats' calvarial bone samples were collected and subjected to Micro-CT computed tomography analysis and tissue section histological analysis.

Results: The findings of our investigation revealed a notable improvement in BV/TV, Tb. N, and Tb. Sp when the synthetic bone substitutes MBCP® were combined with either UC or SEC-isolated DPSC-sEVs, as compared to the control group without EVs. Furthermore, UC and SEC isolated DPSC-sEVs showed comparable outcome in bone regeneration in vivo.

Conclusion: These progressive investigations underscore the perpetual refinement of bone regeneration methodologies, auguring a promising trajectory for the advancement of dental surgical interventions.

Keywords: MBCP, dental pulp-derived stem cells, bone regeneration, small extracellular vesicles

Effect of carotenoid on 5FU-induced cytokine production in hOMK

Fumishige*,Toshiro Yamamoto,Kenta Yamamoto,Keiji Adachi,Masaru Nishigaki,

Atuhiro Sakashita,Akinori Hasegawa,Narisato Kanamura

[1]Dental Medicine, Kyoto Prefectural University of Medicine Graduate School of Medical Science,Kyoto, Japan

Introduction: Beta-cryptoxanthin (β-cry), a carotenoid abundant in satsuma mandarin, has anticancer and antioxidant effects. We previously reported the anti-inflammatory effects of β-cry on the periodontal ligament. However, the effects of β-cry on oral mucositis, an adverse event due to cancer chemotherapy, remain unclear. Beta-cryptoxanthin (β-cry), a carotenoid abundant in satsuma mandarin, has anticancer and antioxidant effects. We previously reported the anti-inflammatory effects of β-cry on the periodontal ligament. However, the effects of β-cry on oral mucositis, an adverse event due to cancer chemotherapy, remain unclear.

Objectives: 5-fluorouracil (5-FU)are frequently employed for oral cancers, with a high incidence of stomatitis. In the present study, we examined the effects of 5-FU and β-cry on human normal oral mucosal keratinocytes (hOMK).

Method: hOMK was seeded on a culture plate and cultured with 5-FU and β-cry. The cell number, mRNA expression of inflammatory cytokines and matrix metalloproteinases (MMPs), and production of inflammatory cytokines in hOMK were evaluated.

Results: The numbers of hOMK significantly reduced with 5-FU stimulation, whereas it increased with β-cry treatment. mRNA expression of interleukin (IL)-6, IL-8, metalloproteinase (MMP)-2, and MMP-9 and protein production of IL-6 and IL-8 in hOMK were augmented on 5-FU stimulation. Simultaneously, β-cry treatment significantly suppressed IL-8 and MMP-9 mRNA expression, and IL-8 production was induced on 5-FU stimulation.

Conclusion: Beta-cry may have anti-cytotoxic and anti-inflammatory effects on oral mucositis caused by 5-FU, suggesting that it may provide a novel method for preventing oral mucositis due to cancer chemotherapy.

Keywords: 5-fluorouracil, oral mucosal keratinocytes, carotenoid

Non-phosphaturic variant of phosphaturic mesenchymal tumor of the maxilla in a child: a rare case report

Hye-Jung[1*]

[1]Department of Oral Pathology, School of Dentistry and Dental Institute, Seoul National University, Seoul, South Korea

Introduction: Phosphaturic mesenchymal tumors (PMTs) are extremely rare neoplasms known for causing tumor-induced osteomalacia (TIO) typically by overproducing fibroblast growth factor-23 (FGF23). With fewer than 500 reported cases, PMTs primarily affect middle-aged adults and are commonly found in the head and neck region with an even gender distribution. In addition, uncommon cases of PMT emerge devoid of TIO, known as the "nonphosphaturic" variant, which can be challenging to diagnose.

Objectives: We report here an additional case of a "non-phosphaturic" variant of PMT occurring in the maxilla of a pediatric patient.

Method: Utilizing patient data from electronic medical records (EMR) and radiographic images, we conducted a review of histopathological slides stained with hematoxylin and eosin, as well as immunohistochemical analysis.

Results: An 11-year-old male patient was referred because of a tumor-like lesion in the anterior maxilla. Radiographically, a large, expansile, multilocular lesion involving the anterior maxilla was observed which extended superiorly, elevating the floor of the nasal cavity and reaching the ostium of the left maxillary sinus. Microscopic findings revealed benign, ovoid, spindle to stellate cells within a highly vascularized stroma and contained the pathognomonic grungy calcification consistent with PMT. However, the patient had no clinical features of TIO and had normal phosphorus levels. Therefore, the final diagnosis of PMT, "non-phosphaturic variant", was made.

Conclusion: Enhanced awareness of the distinctive histological and clinical characteristics of this rare entity would facilitate its differentiation from some mesenchymal tumors with which it could be confused.

Keywords: phosphaturic mesenchymal tumor, non-phosphaturic, FGF23, maxilla

Establishment of Murine Syngeneic Head and Neck Squamous Cell Carcinoma Cachexia Model for Early Diagnosis

王暄晴 [*]

[1]Department of Dentistry, College of Dentistry, National Yang Ming Chiao Tung University, Taipei City, Taiwan

Introduction: Cancer cachexia is a multifactorial syndrome characterized by loss of muscle mass, adipose tissue and body weight, along with systemic inflammation and poor life quality and worst prognosis. The prevalence of cachexia in head and neck squamous cell carcinoma (HNSCC) patients is about 72%. Additionally, our previous studies have validated that DNAJA3, a mitochondrial co-chaperone, acts as a tumor suppressor to suppress the tumorigenesis and metastasis of HNSCC, and it plays a vital role in myogenesis.

Objectives: In this study, we aimed to establish murine HNSCC (mHNSCC) cachexia models and characterize the pathophysiologies for preclinical study.

Method: In vivo: mHNSCC cells, MOC-L1, MTCQ1-GFP and derivative primary cell-lines, were subcutaneously inoculated into WT and Dnaja3 transgenic mice, respectively. The body weights were measured, and the tissues were collected, subsequently, the cachectic pathophysiologies were analyzed. In vitro: Murine myoblasts (C2C12) and preadipocytes (3T3-L1) were induced to differentiation, subsequently, treated with conditioned medium derived from mHNSCC cells to demonstrate in vitro cachexia model.

Results: We discovered the enhanced stemness and malignancy of mHNSCC under sequential transplantation in vivo. The mHNSCC mediated cachectic mice were observed with body weight loss and adipose tissues wasting. Moreover, the imbalanced energy homeostasis, impaired muscle differentiation and increased inflammation with the down-regulation of DNAJA3 were observed both in vivo and in vitro.

Conclusion: This study determines the stages of mHNSCC pre-cachexia and cachexia. The promising in vivo and in vitro studies showed deeply insights of pathophysiology in HNSCC cachexia. Thus, early diagnosis of mHNSCC cachexia may benefit for better treatment of cachexia.

Keywords: Cancer cachexia, Head and Neck Squamous Cell Carcinoma (HNSCC), DNAJA3, muscle atrophy, adipose tissue wasting, systemic inflammation, transgenic mice

Stroma-derived Secretome Promotes Tumor Organoid Formation in Ameloblastoma

姚紀如 [1*],Ting-Han Chang[1,4],Da-Yo Yuh[2],Wei-Chin Chang[3],Yuan-Wu Chen[3]

[1]Institute of Oral Biology, College of Dentistry, National Yang Ming Chiao Tung University, Taipei 112, Taiwan, ROC

[2]Department of Periodontology, School of Dentistry, Tri-Service General Hospital, National Defense Medical Center, Taipei 114, Taiwan, ROC

[3]Department of Oral & Maxillofacial Surgery, School of Dentistry, Tri-Service General Hospital, National Defense Medical Center, Taipei 114, Taiwan, ROC

[4]Department of Dentistry, College of Dentistry, National Yang Ming Chiao Tung University, Taipei 112, Taiwan, ROC

Introduction: Ameloblastoma (AM) is a benign odontogenic tumor with a local aggressive behavior and high recurrent rate. Although some studies suggested that PLX4032 may effectively inhibit cell lines with BRAF V600E, the clinical trial showed that targeting BRAF V600E and MEK cannot significantly reduce tumor size. The tumor organoids implanted in mice produced by our previous research showed that the co-culture group with AMMSC can significantly promote generation of tumor-like structures. After adding PLX4032 to tumor organoids, all surviving cells expressed LGR5 (stem cell-related markers).

Objectives: Thus, we hypothesized that AMMSC-derived secretome promotes stem cell and EMT properties in ameloblastoma epithelial cells. We aimed to investigate the impact of the secretome produced by AMMSCs and utilized organoid models to simulate the tumor microenvironment.

Method: Two distinct cell populations, epithelial and MSCs, were isolated from human AM tissues and expanded in vitro. For 3D-organoid culture, AM-EpiSCs mixed with MSCs were mixed with Matrigel and continuously cultured for 10 days. Then, the histopathological and molecular properties of tumor organoids were determined by H&E staining and immunofluorescence studies.

Results: The results showed that the AMMSC-derived secretome promoted cell proliferation, migration, stemness, and expression of proteins associated with epithelial-mesenchymal transition (EMT). Elevated LGR5 expression was also observed in the organoid model under co-culture conditions with MSCs and treated with AMMSC-derived secretome.

Conclusion: Our results indicate that AMMSC-derived secretome significantly enhances stemness- and EMT-related functions in the organoid model. Further experiments will focus on identifying the components in the secretome that promote stemness- and EMT-related functions.

Keywords: Ameloblastoma, Tumor microenviroment, Organoid model

Effects of regular high-intensity exercise training on oral microbiota in adolescent and older populations

姚姍霏 [1*]

[1]Institute of Oral Biology, School of Dentistry, National Yang Ming Chiao Tung University, Taipei City, Taiwan

Introduction: The oral microbiota undergoes alterations due to various environmental factors, including exercise training. Previous studies have demonstrated changes in gut bacterial composition following exercise training, with potentially more pronounced variations observed in different age groups, particularly among older individuals. Given the established relationship of the Oral-Gut microbiota axis, this study aims to elucidate whether exercise induces changes in the oral microbiota.

Objectives: This study seeks to validate the impact of exercise on oral microbiota across different age demographics, with a specific focus on younger and older individuals.

Method: Forty participants were recruited for the initial phase of the research, comprising 20 school team students and 20 non-school team students. Oral conditions were examined, and tongue-coating microbiota samples were collected. Next-generation sequencing of 16S rRNA was employed to analyze oral microbiota differences between these two groups. Subsequently, an older population was included to assess the exercise effect on oral microbiota within various age groups. Lastly, a comparison between younger and older groups was conducted to ascertain exercise effects on oral microbiota across different age demographics.

Results: No significant differences were observed between school team students and non-school team students. However, significant disparities were noted when comparing younger individuals with older ones, particularly among older individuals with suboptimal physical conditions.

Conclusion: These findings affirm the association between oral microbiota and age, influenced by the effects of exercise. This underscores the significance of exercise in maintaining both oral microbiota and overall body health.

Keywords: "oral microbiota" "exercise training" "adolescent" "older"

Hypoxia affected IL-8 secretion from Porphyromonas gingivalis stimulated epithelial cells.

Yen-Jung Chen[1*],Sse-Jung He[2],Ching-Yi Wu[2]

[1]Department of Dentistry, National Yang Ming Chiao Tung University

[2]Institute of Oral Biology, National Yang Ming Chiao Tung University

Introduction: Periodontitis, which destroys periodontium, is a chronic inflammatory disease, initiated by keystone pathogens, including Porphyromonas gingivalis. Over the past few years, many studies have investigated infectious mechanisms of P. gingivalis using its lipopolysaccharides to stimulate gingival fibroblasts under normoxia; however, ignoring P. gingivalis as an anaerobic bacterium initiating its infection by invading oral epithelial cells under physiological hypoxia.

Objectives: To verify whether P. gingivalis has different effects on the cell viability and cytokine secretion of NOK cells under physiological hypoxia (5% oxygen levels) compared to normoxia.

Method: NOK cells were challenged with heat-inactivated P. gingivalis (P.g) under hypoxia or normoxia. After 24 hours of stimulation, cell viability and Interleukin (IL)-8 and IL-6 levels in supernatants were measured by MTT assay and enzyme-linked immunosorbent assay (ELISA), respectively. After 30 minutes of stimulation, expression levels of related signaling molecules were assessed through Western blot analyses.

Results: Compared to normoxia, P.g of MOI of 1000 decreased cell viability less significantly under hypoxia.. Meanwhile, significant enhancement of IL-8 secretion stimulated by P.g of MOI 100 under normoxia was inhibited under hypoxia. IL-6 secretion was also lower under hypoxia but without significance. In contrast, activation of ERK1/2 was increased by hypoxia.

Conclusion: Regarding the activation of ERK1/2 did not synchronize with the secretion of IL-8, IL-8 was likely affected by the activation of HIF-1α under hypoxia or other related signaling pathways such as NF-κB. Thus, the effects of HIF-1α and NF-κB on secretion of IL-8 should be the study focus in the future.

Keywords: Periodontitis, Porphyromonas gingivalis, Physiological hypoxia, Interleukin-8, ERK1/2 signaling pathway.

Characterization of Oral Cancer-associated Microbiota

Yu-Min Lin[1*],Fa-Tzu Tsai[1],Po-Han Wu[2],Ding-Han Wang[2],Ming-Lun Hsu[2],Yu-Cheng Lin[2]

[1]Institute of Oral Biology, National Yang-Ming Chiao Tung University

[2]College of Dentistry, National Yang-Ming Chiao Tung University

Introduction: DNA methylation plays a pivotal role in oral cancer, with the methylation status of the ZNF582 gene serving as a notable prognostic indicator for disease advancement. Furthermore, dysbiosis within the oral microbiota has been implicated in the development of cancer. However, the precise relationship between ZNF582 methylation and the oral microbiota in oral cancer remains uncertain.

Objectives: This study aims to investigate the mutual associations among oral microbiota composition, ZNF582 methylation levels, and the progression of oral squamous cell carcinoma (OSCC).

Method: Mucosal samples were collected and underwent bisulfite conversion to evaluate DNA methylation, while next-generation sequencing (NGS) was employed to analyze the oral microbiota's composition. Participants were categorized based on methylation levels and pathological conditions. Results indicated that the OSCC group (n=14) exhibited higher bacterial species abundance compared to the healthy group (n=11), as evidenced by alpha diversity metrics (Chao1, Shannon index), Beta diversity analysis (PCA), and taxonomic composition barplot.

Results: Integration of ZNF582 DNA methylation with pathological characteristics revealed significant disparities in bacterial species diversity and abundance between OSCC patients and healthy individuals. This study underscores a significant correlation between ZNF582 methylation, oral microbiota composition, and OSCC progression, underscoring their potential as critical pathophysiological factors in comprehending and addressing this disease.

Conclusion: These findings contribute to the viability of early OSCC prediction through the identification of oral microbiota alterations during the carcinogenic process.

Keywords: Oral Microbiota, Oral Cancer

Advanced 3D Imaging Analysis of Condyle Changes in Rat Temporomandibular Joint Osteoarthritis

Kim-Xuyen Nguyen[1*]

[1]Department of Dentistry, College of Dentistry, National Yang Ming Chiao Tung University

Introduction: Temporomandibular joint osteoarthritis (TMJ OA) involves progressive cartilage degradation, subchondral bone remodeling, and synovial inflammation. Comprehensive condylar bone and cartilage change assessment is critical for understanding pathology and evaluating treatment efficacy.

Objectives: This study implements a 3D imaging analysis employing live micro-CT for rat TMJ condylar bone assessment and a contrast staining agent for condylar cartilage evaluation.

Method: The 3D imaging analysis workflow includes six phases: image acquisition, image pre-processing, superimposition, segmentation of the volume of interest (VOI), feature extraction, and statistical analysis. This study introduces a novel software for pre-processing images that rapidly isolates the mandible from the skull bone. We proposed a novel method for bone analysis utilizing superimposition before VOI segmentation to consistently crop identical VOI across multiple time points. Semi-automatic segmentation is employed to separate the cartilage from the condyle.

Results: The pre-processing software optimizes time and power computing for the workflow, reducing processing time tenfold compared to our previous method. Advanced bone VOI segmentation addresses inaccuracies in longitudinal research, which typically analyzes individual samples at single time points. The 3D cartilage models offer a comprehensive assessment, overcoming challenges of time-consuming procedures, tissue damage, and limited 2D perspectives in histological analyses.

Conclusion: This study introduces a comprehensive methodology for assessing condylar bone and cartilage, enhancing understanding of TMJ OA pathology and offering insights for therapeutic strategies.

Keywords: Temporomandibular joint osteoarthritis, 3D imaging analysis of condyle changes

Questionnaire survey on oral health among elderly people in Japan

Toshiro[1*],Yoshiaki Yamamoto[1],Tetsuya Adachi[1],Shigeta Takizawa[1],Fumishige Oseko[1],Mitsunobu Akane[1],Toru Nakamura[1],Taku Asai[1],Takafumi Murayama[1],Narisato Kanamura[1]

[1]Department of Dental Medicine, Graduate School of Medical Science, Kyoto Prefectural University of Medicine

Introduction: In Japan's long-lived regions, it has been reported that being over 80 years old and maintaining 20 teeth (achieving 8020) leads to the acquisition of oral function and the diversity of the resident oral microbiota (Dent. J . 2024, 12, 16).

Objectives: Therefore, we conducted a questionnaire survey regarding oral health in the same region.

Method: questionnaire survey was conducted for 205 people over 80 years of age for 5 years starting in November 2018, and statistical analysis was conducted. This research was approved by the University's Medical Ethics Review Board (ERB-C-885).

Results: 22.4% had tooth and gingival problems, 25.4% had gingival swelling more than once in the past year, the highest number of times a day was brushing teeth, 37.6% had interdental cleaning, and 37.6% had electric brush use. 3.4% said they used dental rinses, 18.5% used dental rinses, 21.0% said they cleaned their tongue, 86.8% said they had a family dentist, and 67.8% and 38.5% said they had visited the dentist at least once in the past year and had tartar removed. there were. The 8020 achievement rate was 38.5%, and although there was no difference in the frequency of tooth brushing between those who achieved 8020 and those who did not achieve it, the rate of interdental cleaning was significantly higher (p<0.05).

Conclusion: These results suggest that the effects of behavioral changes over time on the subjects' oral health may be affected, and further investigation is needed.

Keywords: questionnaire survey, oral health, Kyotango

The relationship between pneumonia and dental managements in patients with newly diagnosed cerebral palsy

馥萱 [1*]

[1]School of Dentistry, Chung Shan Medical University, Taichung, Taiwan

Introduction: In general, improving oral health can reduce the risk of pneumonia. While regular dental checkups are important, cerebral palsy (CP) patients with dysphagia may be at risk for aspiration pneumonia from treatments such as scaling.

Objectives: The purpose of this retrospective cohort study was to investigate the risk of pneumonia and the relationship with dental treatments among patients with CP in Taiwan.

Method: We identified 10544 patients aged 2 to 70 who sought medical treatment for CP between 2009 and 2019 from the NHIRD. We also obtained 63264 control subjects 1:6 matched on sex and age at the index date from NHIRD. Cox regression and Kaplan–Meier plot were used to estimate the risk of pneumonia.

Results: Compared with non-CP group, the adjusted hazard ratio (aHR) for the risk of pneumonia in the CP group was 2.691 (95% CI, 2.574-2.813). The CP cohort's cumulative probability of pneumonia was significantly higher than the non-CP cohort within 132 months after the index date (P <0.001). Patients with CP who had 1-2 times of dental visits (aHR, 0.915; 95% CI, 0.829-1.010) and more than 2 times of dental visits (aHR, 0.858; 95% CI, 0.726-1.015) had a lower risk of pneumonia, but the difference was not statistically significant.

Conclusion: The results of our study showed that patients with CP had a higher risk of pneumonia. Dental visits may have slight protection for pneumonia in patients with CP. However, some comorbidities would cause higher risk of pneumonia in patients with CP.

Keywords: pneumonia, dental visit, cerebral palsy

Association between Dysphagia and Oral Health Related Quality of Life among Taiwanese Elder People

Po-Yen Lin[1*], Hsiu-Hsien Chen[1,2], Ching-Kai Lin[2,3], Shao-Ching Chen[4], Lin-Yang Chi[1,5]

[1]Department of Dentistry, College of Dentistry, National Yang Ming Chiao Tung University, Taipei, Taiwan

[2]Department of Dentistry, National Defense Medical Center, Taipei, Taiwan

[3]Department of Dentistry, New Taipei Municipal Tucheng Hospital, New Taipei City, Taiwan

[4]Department of Oral Health, Ministry of Health and Welfare, Taipei, Taiwan

[5]Department of Stomatology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

Introduction: The elderly population in Taiwan is increasing. However, there was no single study that examined the association between dysphagia and oral health-related quality of life (OHRQoL) in both community-dwelling and institutionalized elderly.

Objectives: To investigate the association between dysphagia and OHRQoL in community-dwelling and institutionalized elderly people in Taiwan.

Method: Two cross-sectional surveys were conducted. OHRQoL was assessed by the Geriatric Oral Health Assessment Index (GOHAI), and dysphagia was assessed by the Eating Assessment Tool (EAT-10), with the score ≥ 3 being classified as dysphagia. Structured questionnaires were used to collect data on participants' background and oral health-related behaviors. Standardized oral examinations were performed to record participants' dental status and tongue pressure. Univariate and multivariate linear regression analyses were conducted to test for an association between dysphagia and OHRQoL.

Results: A total of 398 community-dwelling and 298 institutionalized older adults were recruited and completed the study. Among community-dwelling elders, 24.6% (98/398) were classified as having dysphagia, and their mean GOHAI score was 43.14 ± 7.41, which was significantly lower than those without dysphagia (49.57 ± 5.98, P < 0.0001). Institutionalized elderly also showed the same pattern, 40.9% (122/298) were classified as having dysphagia, and their mean GOHAI score was 44.20 ± 8.67, significantly lower than those without dysphagia (54.34 ± 6.67, P < 0.0001). After adjusting for potential confounders, multivariate linear regression analyses showed that elderly patients with dysphagia had significantly lower GOHAI scores than those without dysphagia.

Conclusion: The present study showed that older people with dysphagia were strongly associated with lower OHRQoL.

Keywords: dysphagia; oral health related quality of life; elder people; community-dwelling; institutionalized

Comparing Tilted Implant Accuracy in Posterior Mandible Using Dynamic Navigation vs Static Navigation with Varying Bone Densities

Javier[1*]

[1]Prosthodontic department of National Taiwan University Hopsital NTUH

Introduction: The precision of implant placement is crucial for the overall success of implant procedures, especially when dealing with tilted implants.

Objectives: It aims to compare accuracy and precision of angle, platform, and apex deviation in tilted implant using X-Guide, Iris-100, and stent guide, with two different bone densities.

Method: CBCT scans and digital scans of fully edentulous patients were used to create the master model. Two types of sawbone were simulated at tooth 45: 30-pcf+1mm cortical and 20-pcf+no cortical bone, n=20 per group (n=120). A 30-degree tilted Nobel Parallel CC RP(4.3x13mm) implant was designed using 3Shape. All surgeries were performed by a single operator. Data was acquired with 3Shape-E4scanner and compared to initial data with Geomagic-ControlX. Statistical analysis was conducted using Kruskal-Wallis and Wilcoxon tests with $P<0.05$.

Results: Iris-100 exhibited better accuracy in apex and angle deviation, with stent showing superior platform deviation accuracy in the 20-pcf with no cortical bone group. X-Guide demonstrated consistent performance across both bone samples. In terms of angle deviation, no significant difference was observed between Stent and Iris 100, but both were more accurate than X-Guide. Stent was more accurate than Iris-100 in apex deviation, and in platform deviation, Stent outperformed both Iris-100 and X-Guide. The operator's experience did not significantly impact the results.

Conclusion: The accuracy of tilted implant placement using both static and dynamic navigation methods is comparable. Stent-guided navigation exhibited higher accuracy overall. Interestingly,bone density differences had minimal impact on results, except for Iris-100 in angle apex deviation and Stent in platform deviation.

Keywords: static & dynamic navigation, tilted implant accuracy, bone density.

Fabricate Implant-supported Fixed Prostheses to Reconstruct Posterior Support

CHOU,YUN-TING[*]

[1]Graduate Institute of Clinical Dentistry, School of Dentistry, National Taiwan University, Taipei, TAIWAN

Introduction: There are several choices to reconstruct multiple missing teeth, including tooth-supported fixed bridge, tooth or implant-assisted removable denture and implant-supported prostheses. To decide an appropriate treatment plan, we need to evaluate various factors.

Objectives: In this case presentation, the male patient was referred to our department for missing teeth reconsruction plan discussion. Patient had old upper removable partial denture fabricated ten years ago. He wanted to receive implantation this time.

Method: After periodontal treatment, he was arranged to take intraoral scan and cone beam CT for further implant planning.Implant surgery was operated with a 3D-printed fully-guided stent. After second-stage surgery, we took open tray impreesion with impression coping and vinyl polysiloxane material. Also, master cast poured, and casts mounted with facebow transfer record and bite registration record. Provisional prostheses digital designed, fabricated through milling procedure and cemented to temporary abutment with U200. After following three months, we took intraoral scan with scan body for implant position data and also took took intraoral scan with scan body for implant position data and also took provisional prostheses scan for soft tissue morphology data. Final monolithic zirconia crowns were digital designed and copy the transferred stable soft tissue emergency profile. Then, the crowns were cemented to titanium base with U200. Furthermore, we fabricate splint as night guard for protection.

Results: Regular follow up will be needed.

Conclusion: Reconstruct with implantation can reduce risk of decay, maintain bone quality and easy for hygiene maintenance; also the prosthesis longevity is reported to be better.

Keywords: Implant dentistry

Tissue volumetric changes at implant sites and adjacent teeth after early implant placement with contour augmentation: A retrospective clinical study

許育瑞 [1], Hsu, Yu Jui[1*], Lin, Jing-Rong[1], Mau, Lian-Ping[1]

[1]Department of Dentistry, Chi Mei Medical Center, Tainan, Taiwan

Introduction: In early implant placement with contour augmentation, teeth adjacent to implant site should involve flap surgery. However, limited studies focused on volumetric changes of implant site and adjacent teeth in early implant placement.

Objectives: The purpose of this study is to compare the volumetric changes in tissue at the implant site, mesial and distal teeth adjacent to the implant site, and contralateral teeth before extraction and after one year of loading.

Method: Twenty-one patients underwent early implant placement with contour augmentation for a single missing maxillary central or lateral incisor. Stone casts were poured at the pre-extraction stage (T0) and at the 1-year follow-up after implant loading (T1). The casts were then scanned using a desktop 3D scanner, and the resulting stereolithography (STL) files from T0 and T1 were uploaded to Exocad. The implant site (I), mesial tooth to the implant site (MT), distal tooth to the implant site (DT), and contralateral canine (C) were selected as the analytic sites. Facio-palatal dimensions were measured at 1, 3, and 5 mm below the free gingival margin (FGM, corresponding to distances below the free gingival margin), and were compared between T0 and T1.

Results: There were no statistically significant differences between the I, DT, and C groups. However, a statistically significant difference was observed in the MT group

Conclusion: Early implant placement with contour augmentation in a single maxillary gap can restore the facial-palatal dimension of the implant site to its pre-extraction stage without affecting the volumetric changes of adjacent and contralateral teeth.

Keywords: Implant, Tissue volumetric changes, Contour Augmentation

Clinical and radiographic evaluation of the implants applied to implant assisted removable partial dentures as surveyed crowns

Su Young[*],You-ra Kim[1]

[1]Department of Prosthodontics, Seoul National University Dental Hospital, School of Dentistry, Seoul National University, Seoul, Republic of Korea

Introduction: Implant assisted removable partial denture (IARPD) combined with implant surveyed prosthesis has been proposed as a treatment alternative to conventional removable partial denture when additional retention, support and stability are needed in partially edentulous patients. However, a few studies have investigated the implant surveyed crowns applied to IARPDs.

Objectives: The aim of this retrospective clinical study was performed to evaluate the clinical conditions and complications of IARPDs with implant surveyed prosthesis.

Method: This study was performed on patients who treated with IARPD combined with implant surveyed prosthesis from 2015 to 2021. A total of 74 implants applied to 27 IARPDs were evaluated. The factors such as implant location, Kennedy classification, and type of opposite dentition which possibly affected the prognosis of the implants were recorded. The survival rate of the implant and marginal bone resorption around the implant were investigated.

Results: The cumulative survival rate of implants applied to IARPD as abutments was 97.30%. The implant survival rates in the maxilla and mandible were 90.47% and 100% respectively and there was a significant difference (p=0.044). In marginal bone resorption, there was no significant difference for each condition.

Conclusion: Properly planned IARPD combined with implant surveyed prosthesis would be an alternative treatment option for partially edentulous patients.

Keywords: ental implant, removable partial dentures, surveyed crowns, survival rate

Effect Of Retention Form of Tooth Elements and Acrylic Resin Brand on The Tensile Bond Strength of Tooth Element With Denture Base.

Imas[1*],Marzia Magdalena Tetelepta[1],Sri Wiwik Wiyanti[1],Mujiwati[1]

[1]Dental Technology Department of Health Polytechnic of Health Ministry Jakarta II

119

Introduction: Teeth have a role that is very much needed for humans. Without teeth, some functions of the teeth can be disrupted. Disorders that occur due to tooth loss can be prevented by making dentures to replace missing teeth. In dentures, adequate bonding between the acrylic tooth elements and the denture base is necessary to increase the strength and durability of the denture.

Objectives: This study aimed to understand the effect of the shape of the retained tooth elements and the type of acrylic brand on the tensile bond strength of denture-based acrylic resin.

Method: This was an experimental laboratory study. There were 36 specimens in this study from two brands of acrylic resin. Specimens were divided into three groups: the group without retention, slope retention, and groove retention. Specimen testing was done using a universal testing machine called the Shimadzu AG-X Plus. The data obtained was analyzed using a bivariate, two-way ANOVA test.

Results: The research indicates a significant difference ($p<0.05$) in tensile bond strength for the Vertex brand acrylic resin (0.001). Within the Vertex brand, the slope retention group showed a significant difference ($p<0.05$) of 0.017, and the groove group showed a significant difference of 0.003 in the denture elements.

Conclusion: In conclusion, there was a significant impact of the Vertex brand acrylic resin material compared to the Twin cure base acrylic material on the tensile bond strength of dental elements with a denture base, while the form of retention had no significant influence

Keywords: Retention of dental elements, Tensile bond strength , Acrylic resin

Prevalence of Root Caries and Bacterial Composition Analysis Among Middle-aged and Elderly People

Hui-Ching Lin[1,2,3*], Fa-Tzu Tsai[1], Po-Yen Lin[1], Hsiu-Hsien Chen[1,4], Lin-Yang Chi[1,5]

[1]Department of Dentistry, College of Dentistry, National Yang Ming Chiao Tung University, Taipei, Taiwan

[2]Department of Dentistry, Taipei City Hospital Zhong-xing Branch, Taipei, Taiwan

[3]Department of Health and Welfare, University of Taipei, Taipei, Taiwan

[4]Department of dentistry, National Defense Medical Center, Taipei, Taiwan

[5]Department of Stomatology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

Introduction: Root caries is a major cause of tooth loss in middle-aged and elderly individuals.

Objectives: We aimed to explore the prevalence of root caries (part 1) and to analyze the bacteria composition(Part 2).

Method: Part 1: With a cross-sectional study design, this study recruited individuals aged 40 and above from the community in Taipei City. Standardized oral health examinations and structured questionnaire surveys were conducted to investigate relevant factors. Part 2: Individuals diagnosed with root caries were recruited from dental department. Oral examinations and questionnaire surveys were conducted. Bacterial samples were collected from "root caries sites" and "healthy root surfaces" in the same individual. Next-generation DNA sequencing was utilized to analyze the bacterial composition.

Results: Part 1: A total of 700 community cases were recruited, with age of 58.33 ± 11.42 years. The prevalence of root caries was 20.4%, with a mean root caries index of 0.55 ± 1.58. There was statistically significant difference in root caries prevalence by age group (P=0.00), with root caries severity increasing with age. Part 2: Fifteen middle-aged and elderly individuals were enrolled. Microbiota analysis revealed significant differences between "root caries sites" and "healthy root surfaces"(P<0.005), with dominant bacterial species present at root caries sites and richer abundance of bacterial species on healthy root surfaces.

Conclusion: The prevalence of root caries among adults aged 40 and above was higher than 20%, with unique bacterial profiles. Future preventive efforts should focus on root caries.

Keywords: prevalence of root caries, elderly people, caries-related microbiota

Changes of the temporomandibular joint and craniofacial relationship after conventional class III camouflage treatment: A comprehensive CBCT and MRI analysis

Panjaree[1*], Teekayu Plangkoon Jorns[2], Warinthorn Phuttharak[3], Rajda Chaichit[4], Pipop Sutthiprapaporn[1]

[1]Division of Orthodontics, Department of Preventive Dentistry, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand

[2]Division of Oral biology, Department of Oral Biomedical Science, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand

[3]Department of Radiology, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

[4]Division of Dental Public Health, Department of Preventive Dentistry, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand

Introduction: Orthodontic camouflage is a popular and effective option to treat skeletal class III malocclusion in nongrowing patients. Intermaxillary traction is commonly used in this treatment to reposition both teeth and mandible, however, its potential impact on the temporomandibular joint (TMJ) was recently revealed.

Objectives: To comprehensively assess changes of the TMJ components and craniofacial relationship following conventional class III camouflage treatment, using a combination of CBCT and MRI

Method: This study is a clinical trial focusing on skeletal class III patients who met eligibility criteria. Non-extraction camouflage treatment, by conventional straight wire mechanics with intermaxillary elastics, was operated. CBCT and MRI were taken before treatment (T0) and after achieving normal occlusion (T1). The condylar position and lateral cephalometric parameters were measured from CBCT while the articular disc position and length were measured from MRI, using Dolphin® imaging software and MicroDicom DICOM viewer software, respectively. The differences in each variable between T0 and T1 were individually analyzed by IBM® SPSS® software.

Results: The CBCT measurements revealed significant changes in the craniofacial relationship, particularly in the mandible, after class III camouflage treatment using conventional straight wire mechanics with intermaxillary elastics. Nonetheless, there were non-significant changes in position and morphology of the condyle. Similarly, the MRI measurements demonstrated non-significant changes in both position and length of the articular disc after this treatment.

Conclusion: Conventional class III camouflage treatment significantly improves the craniofacial relationship, whereas not inducing any significant adverse effects on the condyle and articular disc of the TMJ.

Keywords: Class III malocclusion, camouflage treatment, condyle, articular disc, CBCT, MRI

LH for skeletal Class II malocclusion combined with congenital missing and anterior spacing

鄭璿 [1*],Yuan-Hou Chen[1],Tzu-Hsin Lee[2],Jian-Hong Yu[1]

[1]Department of Orthodontics, China Medical University Hospital Medical Center, Taichung city, Taiwan, R.O.C.

[2]Department of Orthodontics, Changhua Christian Hospital, Chaunghua City, Chaunghua County, Taiwan R.O.C.

Introduction: Treatment of skeletal Class II malocclusion combined with congenital missing and anterior spacing by using LH (Improved Super-elastic Ti-Ni alloy wire, developed by Tokyo Medical and Dental University) will be discussed.

Objectives: Discuss the treatment of Skeletal Class II malocclusion combined with congenital missing and anterior spacing using LH(Improved Super-elastic Ti-Ni alloy wire, developed by Tokyo Medical and Dental University).

Method: A 23-year-old male consulted us for orthodontic treatment. He complained of poor dental alignment and spacing in the upper anterior. Clinical examination revealed skeletal Class II relationship and a straight profile. Anterior teeth spacing with bilateral peg laterals, retained lower left primary second molars and congenital missing of multiple premolars can be also noted.

Results: For this patient, we used LH for alignment. Space closure was performed with elastic chain and IME. The active treatment took about 3 years in total, and the improvement of appearance and dentition alignment were noticeable.

Conclusion: In this case, the properties of LH(super-elasticity and shape memory) for alignment of poor positioned teeth, as well as the use of IME can be noted. Consideration of space due to congenital missing of teeth, facial profile and Bolton ratio will be discussed. Finally, after 3 years of treatment, a desirable result was achieved, and the patient was pleased with the treatment outcome.

Keywords: Congenital missing, Peg lateral

LH for the treatment of Angle Class III case with anterior open bite and crossbite

Jian-Hong Yu[1*], Fan Yu[1], Tzu-Hsin Lee[2], Yuan-Hou Chen[1]

[1]Department of Orthodontics, China Medical University Hospital Medical Center, Taiwan, R.O.C.

[2]Department of Orthodontics, Changhua Christian Hospital, Chaunghua City, Chaunghua County, Taiwan R.O.C.

Introduction: LH (low hysteresis, ISW, Improved Super-elastic Ti-Ni alloy wire, developed by Tokyo Medical and Dental University) for the treatment of Angle Class III with anterior open bite and crossbite will be discussed.

Objectives: A 23 years old male came to our clinic with a chief complaint of anterior open bite and crossbite and not able to chew food well. Clinical examination revealed an Angle Class III malocclusion with anterior open bite, crossbite and spaced arch. Radiographic and clinical examination showed a skeletal Class III pattern.

Method: We used LH to level the upper and lower arch and to correct the anterior open bite and crossbite. Intermaxillary elastics(IME) were also used to achieve a better interdigitation. Finally, adequate overbite, overjet and a desirable occlusion were achieved. The active treatment time took 2 years and 2 months.

Results: The active treatment time took 2 years and 2 months. Finally, adequate overbite, overjet and a desirable occlusion were achieved.

Conclusion: In this case, we will discuss the non-extraction strategy by using LH to correct the anterior open bite, crossbite and inter-jaw relationship. The use of IME to achieve a better interdigitation was also discussed. A desirable occlusion (with adequate overbite and overjet) and a favorable facial profile after the active treatment were achieved.

Keywords: Angle Class III, anterior open bite and crossbite

Reduce Postoperative Nausea and Vomiting After Full Mouth Treatment After General Anesthesia By Using Different Medications

abdulrahman[*]

[1]Dental Department, Sharourah Armed Forces Hospital, Sharourah, Saudi Arabia

Introduction: Postoperative nausea and vomiting (PONV) are common unpleasant adverse effects.

Objectives: This study aimed to evaluate the effects of dexmedetomidine, dexamethasone, and ondansetron for preventing PONV in children undergoing dental rehabilitation surgery.

Method: One hundred patients (6-12 years old) scheduled for dental rehabilitation were included. Patients were randomly allocated into 4 groups (25 each) to receive either 0.15 mg/kg dexamethasone (DEX), 0.05 mg/kg ondansetron (OND), 0.3 μg/kg dexmedetomidine (DEXMED), or normal saline (control[CONT]) in DEX, OND, DEXMED or CONT groups, respectively, via infusion after induction of anesthesia. The primary outcome was a PONV incident in the first 24 hours. Secondary outcomes were: granisetron doses during 24 hours postoperative, Paediatric Anaesthesia Emergence Delirium (PAED) scale, Pediatric Objective Pain Scale (POPS) for 4 hours postoperatively, and complications in the first 24 hours.

Results: The reduction of PONV and the overall number of patients who developed PONV was statistically significant in the DEXMED group compared to the CONT group (P = 0.041). However, the DEXMED group was higher compared to the DEX and OND groups but not statistically significant. Granisetron requirements and doses were statistically significantly lower in the DEXMED group than in the CONT group. PAED and POPS scores were much better in the DEXMED group than in the other groups with a statistically significant difference in most of the time measurements.

Conclusion: Dexmedetomidine has promising effects on reducing PONV and rescue antiemetic doses, along with a reduction in pediatric emergence delirium and lower POPS scores with hemodynamic stability in children scheduled for dental rehabilitation procedures.

Keywords: general anesthesia, pediatric dentistry, full mouth, Dexmedetomidine, dexamethasone, dental rehabilitation, ondansetron, postoperative nausea and vomiting

The effect of nasal septum deviation to the mucosal thickness of maxillary sinus in patients with cleft lip and palate.

Panchanok[1*],Rajda Chaichit,Saowaluck Limmonthol,Pipop Sutthiprapaporn[1]

[1]Division of Orthodontics, Department of Preventive Dentistry, Faculty of Dentistry, Khon Kaen University, Thailand

[2]Division of Dental Public Health, Department of Preventive Dentistry, Faculty of Dentistry, Khon Kaen University, Thailand

[3]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Khon Kaen University, Thailand

Introduction: Nasal septum deviation is a common deformity in patients with cleft lip and palate which can be led to change maxillary sinus size and induced rhinosinusitis and nasal breathing problems.

Objectives: To evaluate prevalence and effect of nasal septum deviation on mucosal thickness of maxillary sinus.

Method: 76 patients with unilateral and bilateral cleft lip and palate who received treatment at Tawanchai Cleft Center between 2017 and 2022, aged 8-21 years (mean age: 11.43 $\pm$ 3.73 years). Nasal septum deviation was measured in terms of maximum deviation distance and classified the nasal septum deviation according to Meladina's classification on cone-beam computed tomography images. Additionally, mucosal thickness of maxillary sinus that greater than 3 millimeters were measured. Descriptive statistics were used to describe the prevalence of nasal septum deviation and mucosal thickness of the maxillary sinus.

The relationship between nasal septum deviation and mucosal thickness of maxillary sinus was analyzed using Chi-square test and Fisher's exact tests (95% confidence interval).

Results: 1. 97.37% of the prevalence of nasal septum deviation which had no significantly associated with gender, age, or types of cleft lip and palate. 2. mucosal thickness of maxillary sinus was greater in males than females (male: 75%, female: 39.95%). 3. There was no significant relationship between nasal septum deviation and mucosal thickness of maxillary sinus.

Conclusion: However, mucosal thickness of maxillary sinus tended to increase in severe case of nasal septum deviation. The result illustrated nasal septum deviated towards the no defect side of patients with unilateral cleft lip and palate.

Keywords: nasal septum deviation, mucosal thickness of maxillary sinus, cleft lip and palate, CBCT

Development of Fibrosis in Salivary Glands Receiving Stereotactic Body Radiation Therapy (SBRT)

Meng-Jia (Justin) Lian 連盟家 [1*],Samuel Nahass[1,2],David Karnak[3],Iva Vesela[1,2],Priyan Weerappuli[1,2],
Danielle Wu[4],Mary C. Farach-Carson[4],Isabelle MA Lombaert[1,2]

[1]University of Michigan School of Dentistry
[2]University of Michigan Biointerfaces Institute
[3]University of Michigan Medical School
[4]The University of Texas Health Science Center - Houston School of Dentistry

Introduction: Radiation therapy, as an adjunct to treating cancers in the head and neck region, often causes destruction to the salivary glands. The reduction in saliva production puts patients at risk of caries and infection due to the loss of buffering and immune protection from saliva. Though multiple cell therapy-based biomaterials have shown promising results in regenerating salivary glands, such studies have predominantly been conducted on ectopic sites or within a physiological environment that deviates from the clinical context.

Objectives: We aim to establish a more clinically oriented animal model to better optimize and translate our cell engineering-based therapy efforts.

Method: We applied Stereotactic Body Radiation Therapy (SBRT) on rats to assess the various pathological changes in the salivary glands. This SBRT image-guided method involves a fractionated dose, which better simulates the clinical themes. Animals received 2.5Gy over five days and were analyzed on days 7, 14, 30, and 60 to evaluate pathophysiological changes. Using H&E and Masson trichrome stains, images segmented with deep-learning algorithms were analyzed to determine fibrotic and other pathologic changes over time.

Results: We already observed acinar cell atrophy with vacuolization, interstitial fibrosis, and immune cell infiltration at D7 post irradiation, which further developed over time. The irradiated parotid gland showed more than 50% reduced weight by day 30. Interstitial fibrosis is strongly developed by 60 days post-SBRT.

Conclusion: We established a clinically oriented irradiated rat model, which is now applicable for testing our cell-containing biomaterials in a more relevant microenvironment and better translate our regenerative efforts into clinic applications.

Keywords: salivary gland, fibrosis, xerostomia, hyposalivation, biomaterial

Evaluation of Extraction Socket Healing in Risedronate Analog-medicated Mice

Moeka[1*],Mine Yuichi[1,2],Sano Mizuho[1],Okazaki Shota[1,2],Nikawa Hiroki[3],Murayama Takeshi[1,2]

[1]Department of Medical Systems Engineering, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan

[2]Project Research Center for Integrating Digital Dentistry, Hiroshima University, Hiroshima, Japan

[3]Department of Oral Biology & Engineering, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan

Introduction: Medication/Bisphosphonate (BP)-related osteonecrosis of the jaw (MRONJ/BRONJ) is a rare but potentially severe adverse effect in patients medicating anti-resorptive drugs. Although it has been more than 20 years since MRONJ/BRONJ was first reported, the pathogenesis of the disease is still not fully understood.

Objectives: We performed a basic analysis of the pathogenesis of MRONJ/BRONJ by using a BP analog that has almost the same structure as the BP used in clinical practice, but lacks the ability to inhibit bone resorption.

Method: Eight-week-old female C57BL/6J mice were used in this study. The experimental design included three groups of six mice each: a saline control group, a zoledronate (ZOL) group, and a risedronate (RIS) analog group. The control, ZOL, and RIS analog groups received their respective treatments for two weeks. The extracted mice were kept for an additional 2 weeks for further analysis and were not dosed during this period. Hematoxylin-eosin (HE) staining was performed to evaluate the alveolar bone structure. The number of empty osteocyte lacunae and the area of necrosis in the bone around the extraction socket were quantified.

Results: Evaluation of HE staining images showed that, compared to control mice, there was an increase in empty lacunae and necrotic bone in the bone around the extraction socket of ZOL-treated mice. On the other hand, there was no increase in empty lacunae and necrotic bone in RIS analog-treated mice.

Conclusion: The results suggest that BP lacking the ability to inhibit bone resorption cannot induce the development of ONJ.

Keywords: BRONJ, Bisphosphonate, Risedronate analog

The Relationship Between Different Anchorage Way of Two-stage odontectomy (COFE method) for Mandibular Third Molar and Treatment Duration: A Retrospective Study

Huang, Tao-Chung[1*],Bou-Yue Peng[1,2],Ming-Liang Yen[1],Yu-Li Huang[1],Kang-Fan Liu[1],Cheng-Yang Peng[2], Chih-Ling Tsai [2],Chia-Yu Chen [2],Jung Cheng [3],Yi-Hua Mei[2]

[1]Division of Oral and Maxillofacial Surgery, Taipei Medical University Hospital

[2]School of Dentistry, Taipei Medical University

[3]School of Dentistry, Chung Shan Medical University

Introduction: Odontectomy is a common oral surgical procedure in Oral and Maxillofacial Surgery (OMS) department. However, in certain case, complications like inferior alveolar nerve injury will happen. The two-stage odontectomy, which involves a coronectomy followed by forced eruption (known as the COFE method), was introduced in our OMS department to reduce the risk of nerve damage during wisdom tooth removal. In the COFE method, the surgeon can choose to use wire or mini-screw as an anchorage to extract the remaining root. Once the root is sufficiently distant from the nerve canal, stage II of the odontectomy is performed.

Objectives: This study compares the treatment duration between using wire or mini-screw as an anchorage and evaluates the outcome of two-stage odontectomy of mandibular third molars in a decade at our hospital.

Method: We reviewed the 10-year medical records of patients underwent two-stage odontectomy for mandibular third molars. Data on pre-operative and post-operative parameters, including anchorage method, patient age, and treatment duration, were collected.

Results: After screening, approximately 300 cases were collected. We observed a positive correlation between patient age and treatment duration. Significant differences was observed (p<0.05) in the anchorage methods used.

Conclusion: This retrospective analysis showed a positive association between patient age and treatment duration in mandibular third molar extraction, a as well as significant differences in the effectiveness of different anchorage methods.

Keywords: coronectomy; iatrogenic inferior alveolar nerve injury

Deep learning pipeline for automatic tooth segmentation and enumeration of intraoral photos

NGUYEN DANG KHOA[1*],DOAN THI PHUONG HONG[1],Ding-Han Wang[1],Ming-Lun Hsu[1]

[1]Department of Dentistry, College of Dentistry, National Yang Ming Chiao Tung University, Taipei City, Taiwan

Introduction: Teeth localization is essential for automatic detection of oral diseases. Previous studies on intraoral photos localized each tooth in the photo with bounding boxes. This study presents a novel approach employing deep learning for localization and enumeration of teeth at the pixel-level on upper and lower occlusal intraoral photos.

Objectives: Deep learning pipeline for tooth segmentation and enumeration on upper and lower occlusal intraoral photos.

Method: Upper and lower occlusal intraoral photos from 600 subjects were collected. All 1200 photos were carefully delinated by a trained dentist using CVAT version 2.10 (CVAT.ai Corporation, CA, USA). Tooth numbers were assigned to each of the delinated tooth. The deep learning pipeline includes bounding box detection and enumeration using YOLO model version 8 (Ultralytics Inc., MD, USA). Bounding boxes were prompted into the Segment Anything Model for pixel-level segmenation.

Results: The preliminary results of this semantic segmentation task have mean intersection-over-union (IoU) of 0.9611 and mean F1 score of 0.9720 for the upper occlusal view. The mean IoU and mean F1 score for lower occlusal view are 0.9495 and 0.9618, respectively.

Conclusion: The proposed method achieved high segmentation and enumeration performance on upper and lower occlusal views. These findings hold significant promise for advancing the field of dental diagnostics and paving the way for automated analysis of oral health in forthcoming studies.

Keywords: deep learning, intraoral photos, detection, enumeration

POSTER PRESENTATION

A cohort study using the NHIRD to investigate the associations between chronic periodontitis and hematologic cancers in Asians

黃良吉[1*]

[1]Section of Periodontics, Department of Stomatology, Taichung Veterans General Hospital, Taichung, Taiwan

Introduction: Chronic periodontitis, an inflammation-related disorder affecting global populations, reveals a link to diverse cancers. Numerous epidemiological studies have not shown a link between chronic periodontitis and blood cancers in Asians.

Objectives: Our study aimed to delineate variables associated with the link between chronic periodontitis and hematologic cancers and evaluate the hazard ratio for hematologic cancers in patients with chronic periodontitis.

Method: This study included 601,628 patients, diagnosing with periodontitis, were enrolled from 2001 to 2021 from the NHIRD in Taiwan. We employed comprehensive statistical analyses to investigate the association between chronic periodontitis and hematologic cancers. We calculated incidence density and utilized Poisson regression to analyze relative risk. We compared the cumulative incidence of hematological cancer in chronic periodontitis groups using the Kaplan-Meier method.

Results: The results revealed a significantly lower cumulative incidence of hematologic cancer in individuals with non-chronic periodontitis over a 12-year follow-up period. A Cox proportional hazard regression analysis was conducted, revealing that male (adjusted hazard ratio [aHR] = 1.21, P = 0.014) and hypertension (aHR = 1.34, P = 0.015) were associated with an increased risk of hematologic cancers. Additionally, in the subtype multivariate analysis categorizing hematologic cancer into lymphoma and leukemia, the aHR for leukemia was 1.48 (P = 0.004), while for lymphoma, it was 1.15 (P = 0.140).

Conclusion: These findings contribute to a more nuanced understanding of the relationship between chronic periodontitis and specific subtypes of hematologic cancers.

Keywords: hronic periodontitis, hematologic cancers, leukemia, and lymphoma

The prevalence of Fusobacterium nucleatum before and after periodontal treatment of periodontitis patients in Taiwanese

吳慶榕 [1*], 吳文智 Wen-Chih WU[1], 袁瑞昱 Rey-Yue YUAN[1]

[1]Taipei Medical University Hospital

Introduction: The Fusobacterium nucleatum is the pathogens not only in periodontitis but also in cardiac infection ((Socransky and Haffajee, 2002.) F. nucleatum may serves as an enabler to other microorganisms to spread systemically (Yann Fardinin et al 2011)

Objectives: The purpose of this study is to find the prevalence of the F.nucleatun in periodontitis before and after scaling and root planning and to find the efficacy of periodontal treatment to eradicate the pathogens .

Method: Materials & Methods. Nineteen severe adult periodontitis patients were included . The bacteria were sampling from saliva and pocket via paper point respectively before and 4-6 weeks after scaling and root planning. The collected samples were processed by RT-PCR to quantify the microbes.

Results: The result indicated high percentage of periodontitis patients (>98%) having F.nucleatun in high amount not only in saliva (220,167 counts) but also in periodontal pocket area (721,058 counts). The total amount of F. nucleatun decreased dramatically not only in saliva (50 %) but also in pocket (79%) after periodontal treatment .

Conclusion: In conclusion, delicate periodontal treatment can eradicate effectively the possible pathogens which could be harmful to cardiovascular system.

Keywords: Fusobacterium nucleatum, periodontal treatment

The effects of live Porphyromonas gingivalis on human periodontal ligament stem cell under a physiologic oxygen concentration

YU SIOU CHEN[1*]

[1]Institute of Oral Biology, National Yang Ming Chiao Tung University, Taipei City, Taiwan

Introduction: Porphyromonas gingivalis (Pg) is a major anaerobic pathogen of periodontitis with the loss of periodontal tissues. The regeneration and repair of these tissues are supported by periodontal ligament stem cells (PDLSCs). During pathological conditions, PDLSCs may come into contact with live Pg, which can affect their functions negatively. However, most previous in vitro studies investigating the interaction between Pg and PDLSCs are short-term and conducted under unphysiological oxygen levels. As a result, the long-term effects of live Pg on PDLSCs are still unexplored. Additionally, short-term results may not accurately reflect the in vivo situation.

Objectives: We have developed a novel Pg-PDLSC coculture system allowing long-term coculture under a physiological oxygen level to address this issue. This study aims to investigate the effects of live Pg on human PDLSCs using the established coculture system.

Method: The growth of PDLSCs were determined by the cell counting with trypan blue staining. The osteoblastic differentiation of PDLSCs was induced by osteoinduction medium (OIM). Gene expression was analyzed by RT-qPCR. Mineralization was evaluated by Alizarin Red staining method. In the coculture experiments, the medium was changed every 2 days with live Pg added in a multiplicity of infection (MOI) 100.

Results: Our short-term experiments showed that the oxygen levels significantly affected the cytokine expression of PDLSCs. Furthermore, our long-term coculture results demonstrated that live Pg inhibited the proliferation, osteogenic differentiation, and mineralization of PDLSCs.

Conclusion: Additionally, it provides evidence that live Pg may adversely affect the osteogenesis of PDLSCs under physiological oxygen conditions.

Keywords: Porphyromonas gingivalis, periodontitis, periodontal ligament stem cell, coculture, physiological oxygen concentration

POSTER PRESENTATION

132

A Full-Mouth Rehabilitation Case of Periodontal-Induced Cutaneous Fistula.

林子捷 [1*],Bin-Fang Tsai[1],Hung-Cheng Lin[1],Yueh-Chao Yang[1],Yi-An Chen[2]

[1]Department of Dentistry, Cathay General Hospital, Taipei City, Taiwan

[2]Department of Dermatology, Cathay General Hospital, Taipei City, Taiwan

Introduction: Odontogenic cutaneous fistula (OCF) is usually featured with the nodule or dimpling appearance over facial area. Due to the rarity, OCF patient often seeks medical assessment from dermatologist rather than from dentist. Yet, up to 81% of affected patients could be misdiagnosed at their first visit.

Objectives: The objective of this clinical case report is to highlight the unusual OCF to avoid incorrect diagnosis and provide a possible treatment for clinicians.

Method: A 56-year-old man demonstrated an erythematous nodule over his right nasolabial fold for 6 months and attended to our dermatologic department. After the excisional biopsy, the patient was referred to our department for evaluation based on the granulation tissue outcome. Under the dental examination, the right maxillary canine with severe periodontitis was revealed. Intraoral incision and drainage with Penrose while multidisciplinary approaches were also performed successively. Eventually, the prosthodontic rehabilitation was planned and accomplished with both fixed and removable denture to regain the compromised vertical dimension and the functional occlusion.

Results: The patient was completely free from the symptom of OCF within 2 weeks after treatment. We have followed was this case up for one year so far and without any significant complaints nor complications.

Conclusion: Despite the characteristics of odontogenic cutaneous fistulas can be variable, which may lead to diagnostic confusion, the clinicians should have awareness to review patient medical history and examine the clinical signs. A potential odontogenic infection should be take into account, which have emphasized the cooperation between dentists and dermatologists is essential.

Keywords: odontogenic cutaneous fistula, periodontitis, full-mouth rehabilitation

BEST METHOD FOR REVIEWING DENTAL UTILIZATION AT PRIMARY HEALTH CARE UNDER INDONESIA NATIONAL HEALTH INSURANCE (INHI)

Prof Dr drg Diyah Fatmasari MDSc[1*]

[1]Dental health department

Introduction: The National Health Insurance (INHI) was implemented for providing dental health services through primary health care providers. In Semarang, there are 182 dentist as primary health care dentists. The payment system is based on capitation, determined by the number of registered patients, regardless of the number of patient visits. Monitoring by INHI has revealed several discrepancies with service promises, including the high number of referrals, inappropriate referrals, and patient complaints about poor services.

Objectives: This research aims to conduct a study to determine the best methods to increase the utilization of dental health services in primary health facilities. The study needs to identify the reasons for the low number of recorded visits to dental health services in INHI and the high number of referrals.

Method: The research method involves conducting Focus Group Discussions (FGD) with 30 primary health care dentists, based on referral ratio data where the number of referrals does not match INHI records for the last three months. Representatives from INHI facilitated group discussions.

Results: The FGD results revealed several problems and proposed solutions for each group of dentists. One month after the FGD, data were re-collected on the number of referrals and the ratio of patient visits, indicating an increase in the ratio of patient visits and a decrease in the number of referrals. The research results suggest that conducting FGDs with selected groups of dentists would reduce the number of referrals and increase the ratio of patient visits.

Conclusion: Dental

Keywords: dental utilization, primary health care, Indonesia

An Exploratory Analysis of Dental Care Utilization in Indonesia: From the Andresen Health Care Utilization Model Perspective

Risa Emma[*]

[1]Master Health Care Administration , Taipei Medical University, Taiwan

Introduction: In Indonesia, according to the 2018 report from the Indonesian Basic Health Survey, 57,6% of the country's population faces challenges related to dental and oral health. According to the Ministry of the Health Republic of Indonesia, in 2021 because of the pandemic COVID-19 in Indonesia, 57,6% of people in Indonesia, had just 10,2% of people access to dental utilization.

Objectives: To identify socioeconomic and demographic factors influencing dental care utilization in Indonesia based on the Andresen Model perspective.

Method: A cross-sectional study using data from the Indonesia Basic Health Survey (RISKESDAS) 2018. Bivariate analysis of the association between dental utilization and potential indicators included socio-demographic characteristics with cross-tabular chi-square. Multivariable logistic regression analysis models the combined influence of various factors.

Results: Dental service utilization in Indonesia is around 10%, with the highest rates among respondents aged 18-55. Factors such as male gender, lower educational attainment, and residence in rural areas were associated with decreased utilization of dental treatment services. Additionally, respondents exhibiting poor tooth-brushing habits demonstrated lower rates of dental service utilization.

Conclusion: In summary, key factors influencing dental care utilization in Indonesia, as per the Andersen Model, include the significance of addressing the needs of rural residents, particularly adult females, with poor tooth brushing practices. These insights are crucial for tailoring interventions to enhance dental care access and improve oral health outcomes across the country.

Keywords: dental utilization, oral health, Andersen Model

Effects of oral parafunctional care on discharged patients

CHEN, CHIN-CHUN[1*],Yu-Hsuan Tsai[3],Chu Yu[3],Chuan-Hang Yu[2,3],Yu-Feng Huang[2,3]

[1]Chung Shan Medical University, Institute of long term care

[2]Chung Shan Medical University, College of Oral Medicine

[3]Chung Shan Medical University Hospital, Department of Stomatology

Introduction: Pneumonia was the third cause of death (9.2%) among elders older than 65 years old in 2018. About 13% ofelderly showed dysphagia and up to 51% in those stay at long-term care facilities. Poor oral parafunction was a critical factor resulting in those consequences.

Objectives: The rationale of this proposal was to evaluate oral parafunctional care on discharging patients, including those with head and neck cancers surgery、strokes、carrying NG tubing and tracheotomy.

Method: Patients were evaluated using EAT-10 and oral/dental condition. Oral parafunctional cares were instructed at being discharged, 1 month and 3 months after discharged to those who were willing to participate. WHO-QOL was used to study quality of life. In the meantime, profile of mood status and status of oral parafunctions were also accessed.

Results: There were 4 aspects, physiological, psychological, social and environmental, within the WHOQOL. Those who received oral parafuncational care showed better results on all 4 aspects, 9.23% vs 4.71%, 5.12% vs 3.02%, 5.49% vs 3.73% and 6.93% vs 1.38%, respectively. The profile of mood status was also improved in the oral parafuncational care group. The improvement rates of oral parafunctions in the care group and control group were 30.68% and 4.48%, respectively.

Conclusion: Lost of oral parafunctions was common in those patients. Our results demonstrated oral parafunctional care improved their quality of life, better mood status and oral parafunctions. We recommended incorporation of oral parafunctional care in all discharged patients.

Keywords: oral parafunctional care,NG tubing, tracheotomy, strokes, head and neck cancer

Enhancing oral hygiene in bedridden patients through domiciliary dental care: A retrospective study

Ng Min Yee[1], Chuan-Hang Yu[1,2*]

[1]School of Dentistry, Chung Shan Medical University, Taichung, Taiwan
[2]Department of Stomatology, Chung Shan Medical University Hospital, Taichung, Taiwan

Introduction: Domiciliary dental care (DDC) offers dental services tailored to the needs of bedridden patients, aiming to improve oral hygiene and mitigate associated risks such as pneumonia. Despite its potential, the effectiveness of DDC in enhancing oral hygiene remains underexplored, particularly in Taiwan.

Objectives: This study aimed to investigate the impact of DDC on oral hygiene improvement among bedridden patients in middle Taiwan.

Method: A retrospective evaluation was conducted on 61 individuals who received DDC services in nursing homes. Oral hygiene status was assessed using the plaque index (PI), while demographic data (age, sex, cause of bedridden state) and oral findings (DMFT, number of residual roots and remaining teeth) were collected and analyzed.

Results: The study revealed a significant improvement in mean PI from 2.03 to 1.73 following DDC intervention. Stratification based on baseline median PI (2.1) showed greater improvement in the higher baseline PI group, aligning their oral hygiene levels with those of the low baseline group. Multiple regression analysis identified higher baseline PI and younger age (<43 years) as predictors of greater PI improvement, explaining 34.37% of the variance. Notably, the intervention led to a remarkable shift towards lower PI scores, with the low-to-high PI ratio improving from 1:1 to nearly 6:1.

Conclusion: DDC emerged as an effective strategy for enhancing oral hygiene among bedridden patients, irrespective of baseline oral health status. These findings advocate for the expansion of DDC services to optimize oral health outcomes and accessibility for this vulnerable population in Taichung, Taiwan.

Keywords: Domiciliary dental care, bedridden, oral hygiene

The effectiveness of the school-based fluoride mouth-rinsing program extended to junior and senior high school

孫國丁 Kuo-Ting Sun[*]

[1]1. Department of Pediatric Dentistry, China Medical University Hospital , Taichung, Taiwan 2. School of Dentistry, College of Dentistry, China Medical University, Taichung, Taiwan

Introduction: In Taiwan, the prevalence of dental caries experience in permanent teeth increases with age. In terms of schools, the prevalence rate of dental caries experience in permanent teeth was 38.0% among elementary school children, 73.5% among junior school children, and 83.1% among senior high school. In order to improve the prevalence of dental caries, the school-based fluoride mouth-rinsing program is a dental caries prevention and treatment program widely used in countries around the world. Japan has extended the fluoride mouth-rinsing program to junior high schools and With good results, it is recommended to extend the fluoride mouth-rinsing program to junior and senior high schools.

Objectives: Extend the fluoride mouth-rinsing program to junior high schools to improve the prevalence of dental caries that increases with age

Method: At the beginning of the semester, we publicize to students and parents that 0.2% sodium fluoride mouthwash (NaF) is used in high school campuses. Before the start of the semester, dentist is invited to the campus for oral hygiene education and examination, and DMFT is recorded. Mouth-rinsing is used every week. Brush teeth after meal and then use mouthwash. At the end of the semester, oral examination and record DMFT.

Results: After using mouth-rinsing, oral hygiene was improved, and compared with DMFT, it was found that there was a decrease after use.

Conclusion: With continued use of mouthwash, junior high school students pay more attention to oral hygiene and DMFT improves. Therefore, the school-based fluoride mouth-rinsing program should be extended to junior and senior high school campuses.

Keywords: fluoride mouth-rinsing program, DMFT, dental caries, sodium fluoride mouth-rinsing

DEVELOPMENT AND VALIDATION OF TOOL TO EVALUATE DENTAL RESIDENTS' KNOWLEDGE, PERSPECTIVES AND SATISFACTION WITH EXAMINATION PROCESS.

Syed Murtaza Raza[1*],Fakeha Azhar Syed[1],Taimur Khalid[1]

[1]Prosthodontics Residency Program, Section of Dentistry, Department of Surgery, Aga Khan University Hospital.

Introduction: Contemporary medical education is revolves around Competency-based learning.1 The importance of learners' awareness of their assessment process, and its validity and fairness is well documented.2 Candidates' perspectives and suggestions can be valuable in adapting the concept to a more beneficial use in different PG training programs.3

Objectives: To develop a valid and reliable tool to I. explore post-graduate dental trainees understanding and perceptions regarding their assessment process. II. to gauge their satisfaction rate with the current system of summative exit examination.

Method: A 37-item questionnaire was developed (with 8-question adapted from a previously validated questionnaire3) having 7 domains inquiring trainees and recent exit-exam candidates' perceptions, understanding and satisfaction with the current exit examination system (by CPSP).

Results: Scale and item level Content validity was calculated. Item-level content validity index greater than 0.83 for all items except for one. S-CVI was calculated to be of 0.97 for both relevance and clarity of the items. Analysis of the responses from fifteen FCPS residents and exit-exam candidates consenting to participate in the pilot survey yielded the Cronbach's alpha value of 0.7 indicating the internal consistency of the questionnaire within the acceptable range.4

Conclusion: This validated and reliable tool will not only help to assess the knowledge and confidence of the residents on the assessment method but will assist the authority to navigate their process.

Keywords: inter-examiner calibration, candidates' perception of examination

Postoperative instructions for silver diamine fluoride therapy: a scoping review of current evidence and practice

Ivy Guofang[1*],Duangporn Duangthip[2],Edward Chin Man Lo[1],Chun Hung Chu[1]

[1]Faculty of Dentistry, The University of Hong Kong, Hong Kong SAR, China

[2]College of Dentistry, The Ohio State University, Columbus, OH, USA

Introduction: Silver diamine fluoride (SDF) has gained popularity in dentistry as an anti-hypersensitive and anti-caries agent.

Objectives: This study aims to review the postoperative instructions for SDF therapy and examine the evidence supporting these instructions in the treatment of dentine hypersensitivity and caries control.

Method: Two independent reviewers conducted a search across three electronic databases to identify clinical studies using SDF for the treatment of dentine hypersensitivity and dental caries. Additionally, they searched Google Chrome for information from manufacturers, department of health, national dental organizations, authoritative dental organizations, and universities regarding SDF therapy for these conditions. Data on postoperative instructions were extracted and their impact on the treatment of dentine hypersensitivity and caries control was investigated.

Results: This review included 74 clinical studies, nine sets of instructions from SDF manufacturers, and six recommendations from national dental organizations (n=4), health departments (n=1) and universities (n=1). Among the included records, 50 clinical studies, two manufacturers and one health department mentioned postoperative instructions for SDF therapy. The recommendations varied, ranging from suggesting no specific instructions, immediate rinsing, refraining from eating or drinking for 30 to 60 minutes, and even avoiding brushing until the next day after SDF therapy. Importantly, no clinical studies reported the effects of these postoperative instructions on the SDF treatment of hypersensitivity or dental caries.

Conclusion: This scoping review highlights the presence of inconsistent postoperative instructions for SDF therapy in the treatment of dentine hypersensitivity and caries control. Furthermore, there is a lack of evidence supporting the effectiveness of these instructions.

Keywords: silver diamine fluoride, dental caries, dental hypersensitivity, postoperative instruction, scoping review

The Launch of the Medical Dispute Prevention and Resolution Act: What You Need to Know

陳立愷 [1*], 李俊翰 , 柯正樸

[1] 臺灣臺北市立聯合醫院仁愛院區口腔醫學科

Introduction: The Medical Dispute Prevention and Resolution Act (hereinafter referred to as "the Act") officially went into effect on January 1, 2024. The Ministry of Health and Welfare also announced the implementation of nine subsidiary regulations that came into effect on the same day as the main Act. The Act comprises a total of 45 articles.

Objectives: The objective of the Act is to establish a mechanism for the swift resolution of medical disputes, to avoid litigation, to prevent the burden of prolonged legal disputes, and to establish mechanisms for error prevention.

Method: The Act is based on three main principles: "Immediate Care," "Mediation First," and "Accident Prevention." It analyzes the differences in medical practices before and after the implementation of the Act and delves into real case studies to deepen the understanding of the Act's impact.

Results: Through real case analysis of the impact of the Act on medical practices, it aims to protect the rights and interests of both doctors and patients, maintain harmonious relationships, and ensure prompt resolution of any disputes that may arise. Real case examples include immediate implant surgery (extraction and immediate implantation) and root canal treatment where the care team was activated, mediation was applied, and disputes were resolved; subsequently, a review mechanism was established to improve medical quality.

Conclusion: By implementing the Act, resolving disputes, aligning concepts with practice, and promoting harmonious doctor-patient relationships, it aims to protect both patients and healthcare providers.

Keywords: Medical Dispute Prevention and Resolution Act,Dispute Mediation,Error Prevention,Communication and Care

Anthropometrical study on facial changes according to increase in vertical dimension of occlusion

Chan-Jin Park[1*],SEUNG-WAN KIM[1],MIN-KYUNG SEO[1],KI-UN LEE[1],KYUNG-HO KO[1],
YOON-HYUK HUH[1],LEE-RA CHO[1]

[1]Department of Prosthodontics and Institute of Oral Science, College of Dentistry, Gangneung-Wonju National University, Gangneung, South Korea

Introduction: Increasing VDO(vertical dimension of occlusion) can lead to changes in the morphology of the perioral tissues due to the elongation of surrounding oral tissues, potentially resulting in aesthetic changes.

Objectives: This study aims to evaluate the perceptual and tissue changes associated with increased VDO using 3D scanned facial images.

Method: A total of 40 individuals with normal occlusion and no loss of vertical dimension of occlusion participated in this study. Custom mandibular devices were fabricated to increase the VDO by 2, 4, 6, and 8 mm. 3D facial scans were made with the participants wearing the mandibular device to achieve the desired VDO increase. Evaluators (n=60) were asked to detect VDO change in 2 photographs of the same participant. To assess tissue changes with increased VDO, measurements were recorded from the 3D scan images using a CAD program. Measurements were repeated three times for each scan, and statistical analysis was performed using one-way repeated measures ANOVA (α =.05).

Results: The perception of differences was most pronounced for a 4mm increase in VDO. Lower facial height, total facial height, nasolabial angle, lip height increased with the increment of VDO, while lip width decreased. All tissue measurements showed statistically significant differences (P<.05) with increasing VDO.

Conclusion: The 4mm increase in VDO was most sensitively perceived in terms of differences. The increased VDO led to an increase in lower facial height, total facial height, nasolabial angle, lip height and a decrease in lip width.

Keywords: vertical dimension of occlusion, 3D facial scanning, perceptual change, facial soft tissue change

Effect of material and finish line curvature on the marginal integrity of lithium disilicate crown

CHO LEERA[1*],KI-UN LEE [1],MIN-KYUNG SEO1,SEUNG-WAN KIM[1],KYUNG-HO KO[1],
YOON-HYUK HUH1,CHAN-JIN PARK[1]

[1]Department of Prosthodontics, College of Dentistry, Gangneung-Wonju National University, Jukheongil 7, Gangneung, 25457, Korea.

Introduction: The mechanical properties of lithium disilicate (LS2) blocks vary depending on the crystallization stage, which can affect the milling process.

Objectives: The aim of this study was to investigate the effect of material and finish line curvature on the integrity of LS2 crowns.

Method: The titanium abutment with curved and flat finish line was made with one partially- and fully crystallized blocks (n=12). Partially crystallized block was thermally treated following the manufacturer's recommendations. With silicone replica technique and triple scan method, absolute marginal discrepancy was measured at the buccal, lingual, mesial, and distal surfaces. The differences in the measured marginal discrepancy were analyzed by 3-way mixed ANOVA, and post-hoc Fisher's LSD.

Results: The materials had no effect on marginal adaptation in the replica technique but presented difference in the triple scan method. Fully crystallized block exhibited greater marginal discrepancy. Finish line curvature significantly affected marginal adaptation in both measurement methods. Curved group exhibited greater marginal discrepancy than flat group. Location of margin had a significant impact on marginal adaptation in both measurement methods. The interaction between finish line curvature and location of margin resulted in a greater difference in marginal discrepancy of the curved finish line.

Conclusion: Crown fabricated using fully crystallized block exhibited greater marginal discrepancy than that using partially crystallized block. Crown with curved margin exhibited lower marginal adaptation than the flat margin.

Keywords: Lithium disilicate, milling, marginal adaptation, finish line curvature

Innovative glass-ceramic spray coating technique for enhancing zirconia surface characteristics and promoting biological response

Sheng-Han Wu[1], Chien-Ming Kang[2], Dan-Jae Lin[3,4], I-Ta Lee[1], Tzu-Yu Peng[1]

[1]School of Dentistry, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan

[2]Huayi Dental Laboratory, Taipei, Taiwan

[3]Department of Biomedical Engineering, College of Biomedical Engineering, China Medical University, Taichung, Taiwan.

[4]School of Dentistry, College of Dentistry, China Medical University, Taichung, Taiwan

Introduction: Glass-ceramic spray coating (GCSC) is an innovative surface treatment technique for coating the surface of zirconia with a glass-ceramic layer to enhance its physicochemical properties.

Objectives: When applied GCSC to dental implants, it can properly lead to a better distribution of stress; however, for GCSC to be utilized as a surface treatment method for dental implants, its biological responses should be investigated thoroughly.

Method: The experiment was divided into five groups: titanium alloy, zirconia group without treatment, air abrasion, GCSC treatment, GCSC combined with etching (GE). Surface analyses encompassed morphology, roughness, and wettability, and biological responses included cell attachment, viability, and cytotoxicity.

Results: The results revealed that the GE group exhibited the highest roughness, whereas GCSC-treated groups demonstrated a significant improvement in wettability (P < 0.05). All groups exhibited no cytotoxicity, with the GE group demonstrating superior cell attachment and viability.

Conclusion: The study suggests that GCSC renders zirconia surfaces rough and hydrophilic, conferring it excellent biocompatibility. Therefore, GCSC can be a promising surface treatment method for implants.

Keywords: Zirconia, Glass-ceramic coating, Surface treatment, Implant, Biocompatibility

Fabricating the complete denture upon the patient status post partial glossectomy with neutral zone concept and palatal augmentation prosthesis

Yen Wei, Hsu[1*]

[1]Division of Prosthodontics, Department of Dentistry, National Taiwan University Hospital, Taipei City, Taiwan

Introduction: In Taiwan, the incidence rate of oral cancer was one of the highest in the world. The treatment of the oral cancer is usually surgical approach along with chemotherapy or/and radiotherapy. The modalities with dysphagia, functional dysphonia and tooth loss are commonly seen in the patient with glossectomy. During the reconstruction of the oral function upon these patients, the careful evaluation before the treatment will be needed and there will be some challenge to the prosthodontists and to the patients as well.

Objectives: This case presentation is about an oral functional rehabilitation in a fully edentulous 71 y/o female status post partial glossectomy over the right lateral border and dorsal side of the tongue with neutral zone concept and palatal augmentation prosthesis.

Method: The procedure of fabricating the complete denture was carried out. After the bite registration, recording the neutral zone with record base and tissue conditioner was performed before tooth arrangement. The polishing surface was also recorded with PVS material at the wax denture try-in appointment. After the denture was delivered to the patient, the palatal augmentation of the prosthesis had been modified with tissue conditioner and then was replaced with acrylic resin.

Results: During the follow up appointment, the patient was satisfied with the prosthesis. She had improvement upon the chewing, swallowing and speaking.

Conclusion: The careful survey of oral cancer patient would be needed before and after the treatment. The palatal augmentation prosthesis and neutral zone concept will gain better outcome for patients status post partial glossectomy.

Keywords: partial glossectomy; complete denture; neutral zone; palatal augmentation prosthesis

Rehabilitation of Untreated Adult Cleft Palate with an Obturator Prosthesis

Nadiyah[1,2*], Tengku Fazrina Tengku Mohd Ariff

[1]Centre of Restorative Dentistry Studies, Faculty of Dentistry, Universiti Teknologi MARA, Malaysia.
[2]Oral Health Division, Ministry of Health Malaysia.

Introduction: Cleft lip and palate (CLP) is a common congenital disability where 1 in 611 children was born in Malaysia. CLP involves incomplete fusion of palatine processes, leading to difficulties in mastication, swallowing, and speech when untreated. Prosthodontic rehabilitation targets oro-nasal separation, palatal contour, and missing dentition to enhance quality of life. An obturator is utilised to close such tissue openings, primarily in the hard palate.

Objectives: This clinical report describes the prosthodontic rehabilitation of an untreated adult bilateral cleft palate with a Class III skeletal pattern.

Method: The cleft was classified as LAHSAL according to the Modified LAHSAL classification with a maximum width of 20 mm. The treatment aimed to improve the patient's masticatory, aesthetic and hypernasal speech through prostheses. This case was treated with a maxillary complete acrylic obturator with a removable mandibular partial cobalt chrome denture.

Results: Palatogram was used in this case to aid in modifying palatal contour to improve the patient's phonetics. Moreover, the maxillary hollow open obturator achieved the retention of the obturator to engage the residual hard palate and the height of the lateral wall. In addition, a neutrocentric occlusal scheme was provided to enhance the stability and support of the obturator.

Conclusion: At the end of the treatment, the masticatory function of the patient was restored, the speech was improved, and the dental aesthetic was elevated.

Keywords: cleft lip, cleft palate, obturator, palatogram.

Accuracy and Precision of Three-Dimensional Facial Scanners in Patients with Cleft Lip and Palate - An In Vitro Study

Jatupon[1*],Rajda Chaichit[2],Amornrut Manosudprasit[1]

[1]Division of Orthodontics, Department of Preventive Dentistry, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand

[2]Division of Dental Public Health, Department of Preventive Dentistry, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand

Introduction: Three-dimensional facial scanners serve as an alternative to direct anthropometry for recording facial data of patients with cleft lip and palate. No previous studies have investigated performance of Lumio 3D, Vectra H2 and iPhone LiDAR for 3D facial scan on patients with cleft lip and palate or compared accuracy and precision of the three devices.

Objectives: To evaluate accuracy and precision of three scanners by comparing digital measurements with direct antropometry, all based on a 3D-printed resin replica of patients with complete unilateral cleft lip and palate.

Method: A face model was printed using dental model resin. Baseline measurement, including 12 soft tissue and 24 geometric parameters, was performed using a digital vernier caliper. Three scanners used to scan a resin model in the controlled room, 5 times for each scanner. Obtained image files were measured in a computer using 3D modeling software. Statistical analysis was performed assessing mean difference and mean absolute deviation of measurements between four groups to indicate accuracy and between image files from same machine to indicate precision.

Results: Significant mean differences found in all scanners, ranged from 33.33-75% of measured parameters. However, mean absolute deviations were acceptable, ranged from 0.45-0.82 mm. Precision test found at least a pair of measurement error between five repetitive image files. Lumio showed highest precision with 11.11% error. Vectra and iPhone showed lower precision with higher error of 61.11% and 80.33%.

Conclusion: Inaccuracy of tested 3D facial scanners was less than 1mm, which is acceptable for clinical applicability. Imprecision of all machines were found.

Keywords: extraoral scanner performance, facial recognition in dentistry, iPhone LiDAR, Lumio, Vectra, anthropometry

Overlay swing-lock removable partial denture for rehabilitating worn dentition

賴昱任 [1*]

[1]Graduate Institute of Clinical Dentistry, School of Dentistry, National Taiwan University, Taipei, TAIWAN

Introduction: Overlay swing lock removable partial dentures (RPDs are tailored solutions for worn dentition, combining the benefits of overlay dentures with the functionality of swing-lock mechanisms. These RPDs feature specialized attachments that provide stability and retention while distributing forces evenly, offering enhanced comfort and durability for individuals with worn dentition. In this case, details of fabricating the overlay swing lock removable partial dentures will be discussed.

Objectives: A 66-year-old male presented with severe wear on full mouth dentition, leaving only teeth 32-35 in the lower arch. Class II occlusion and inadequate posterior support were noted. Deep bite resulted in lower teeth contacting upper gingiva, compromising occlusal stability and periodontal health.

Method: After interim denture fabrication for posterior support and vertical dimension evaluation, a final impression was taken for lower arch removable partial denture. Due to compromised stability from lost guiding plane pairs, a swing lock RPD was designed for lower arch rehabilitation. Deep bite and worn dentition necessitated metal overlay for vertical elevation. Following resin tooth arrangement, the final overlay swing lock denture was delivered.

Results: With proper denture utilization, complaints about the lower denture were rare. The addition of stable posterior support led to remarkable improvements in chewing function and food intake, showcasing outstanding progress.

Conclusion: The establishment of posterior support and meticulous treatment procedures are paramount to achieving success in full mouth rehabilitation. Through this approach, attaining stable RPDs and ensuring preservation of remaining teeth in worn dentition can be elegantly accomplished.

Keywords: overlay denture, swing lock denture

The Impact of Digital Technologies on Removable Dental Prostheses: Insights from a Bibliometric Analysis

Min-Hsun Hsu[1*], Yu-Chao Chang[1,2]

[1]School of Dentistry, Chung Shan Medical University, Taichung 40201, Taiwan
[2]Department of Dentistry, Chung Shan Medical University Hospital, Taichung 40201, Taiwan

Introduction: The advancement of digital technologies has significantly transformed dentistry, particularly in the realm of removable prosthodontics. This evolution has led to more precise and aesthetically pleasing dental prostheses, impacting patients' oral health-related quality of life.

Objectives: AOur study aims to provide a comprehensive bibliometric analysis of digital dentistry literature concerning removable prostheses up to December 2023, offering insights into publication trends, author contributions, and research focus.

Method: A thorough search using the Web of Science database was performed, we conducted a systematic search and analysis focusing on digital dentistry and removable prostheses. Articles were analyzed for authorship, citations, H-index, affiliations, countries, journals, keywords, and co-authorship networks.

Results: A total of 452 articles met the inclusion criteria, with a notable increase in publications and citations from 2014. The United States and some asia countries emerged as the leading contributors in terms of publications and citations. Prominent journals included the Journal of Prosthetic Dentistry and Journal of Prosthodontics. Goodacre CJ achieved an highest H-index of 14. Keyword analysis revealed key themes such as accuracy, computer-aided design/manufacturing(CAD/CAM) applications, 3D printing, and the impact of material properties on prostheses design.

Conclusion: The bibliometric analysis underscores a growing research interest and significant advancements in digital dentistry regarding removable prostheses since 2014. The United States and Asia countries leads in research output, with CAD/CAM technology being a major focus. This comprehensive overview provides a foundation for future detailed studies in this evolving field.

Keywords: bibliometric analysis, removable prostheses, digital dentistry

Increased oleophilicity of the UV-treated titanium surface

Gehoon[1,4*],Shin Hye Chung[2,4],Wonjoon Moon[4],Byeong-Min Lee[4],Hye-Jung Yoon[3,4]

[1]Department of Oral Physiology, Seoul National University, Seoul, S.Korea

[2]Department of Dental Biomaterials Science, Seoul National University, Seoul, S.Korea

[3]Department of Oral Pathology, Seoul National University, Seoul, S.Korea

[4]Dental Research Institute, Seoul National University, Seoul, Korea

Introduction: Ultraviolet irradiation confers titanium dioxide amphiphilicity. Unlike the UV-induced hydrophilic properties that had a long history of academic interest, oleophilicity has not received much attention.

Objectives: This study aims to investigate the molecular evidence of lipid adsorption onto UV-treated TiO2 surface by in vitro and in silico approaches.

Method: Artificial lipid vesicles were fabricated for empirical confirmation of the increased oleophilicity of the TiO2 surface after UV irradiation and in silico model was developed for computational simulation of the underlying molecular dynamics. After UV treatment and application of a synthetic liposome solution, the TiO2 surfaces were analyzed for surface roughness and the trace of lipid molecules by scanning electron microscopy, energy-dispersive X-ray spectroscopy, and fluorescence confocal microscopy.

Results: The surface roughness was reduced and the increased liposome residues on the surface of TiO2 were observed after UV irradiation. The in-silico simulation of molecular dynamics predicted higher non-covalent bonding energy to phospholipids and a closer atomic distance between the lipid molecules and the TiO2 surface after UV irradiation.

Conclusion: These data suggested that UV irradiation enhanced the oleophilicity of the TiO2, presumably by the result of the hydrogen bonds between lipid and TiO2. Further studies on the oleophilicity of TiO2 are required to elucidate the osseointegration process of UV-treated implant fixtures in hyperlipidemic patients.

Keywords: UV, titanium, oleophilicity, surface

Effect of repeated firings on corrosion resistance of nickel-chromium dental alloys using weight loss method

Marzia Magdalena [1*],Imas Maesaroh1,Heldayani[1],Sri Wiwik Wiyanti[1]

[1]Dental Technology Department of Health Polytechnic of Health Ministry Jakarta II, Indonesia

Introduction: Nickel-chromium alloys are utilized in the porcelain fused-to-metal restoration. Nevertheless, they are frequently subjected to repeated firings. When used in the mouth, ion release may occur due to exposure to a moist environment.

Objectives: This investigation examined the ability of nickel-chromium dental alloys to withstand corrosion resulting from repeated firings.

Method: To do a corrosion resistance test, 36 specimens of two nickel-chromium brands (34 x 13 x 1.5 mm bar shape) were split into three groups: four, eight, and twelve firing times, respectively (n = 6). The corrosion rate was analyzed using the weight loss method in mils per year (mpy). The data were analyzed using a two-way ANOVA (p = 0.05) and the Games-Howell post hoc test was applied to identify group differences.

Results: The test results indicated a statistically significant difference in corrosion rate during the repeated firing (p = 0.012) and the brand with different compositions (p = 0.03). A post-hoc test showed no statistically significant difference between the multiple firings of the brands of nickel-chromium alloys that contained silicon. This contrasts with nickel-chromium alloys that lack silicon components. A statistically significant difference was observed between the four-time firings compared to twelve-time firings (p = 0.02) and the eight-time firings compared to twelve-time firings (p = 0.017).

Conclusion: Multiple firings and different brands with various compositions impacted the corrosion resistance of nickel-chromium dental alloys.

Keywords: Repeated firings, nickel-chromium dental alloys, corrosion rate

COLOR CHANGES OF ACRYLIC RESIN DENTURE BASE AFTER IMMERSION IN TRADITIONAL HERBAL MEDICINE TO PREVENT COVID-19 DISEASE

Endang[1*],Alifah Indah Pratiwi[1]

[1]Dental Technology of Poltekkes Kemenkes Jakarta 2, Jakarta City, Indonesia

Introduction: The color of the acrylic resin base must be considered because it is related to the aesthetics of the oral tissue. One of the properties of acrylic resin is that it can absorb water, including colored liquids, which can cause discoloration of the acrylic resin denture base

Objectives: To determine the effect of traditional herbal medicine to prevent COVID-19 disease on changes in the color of heat polymerized acrylic resin denture base

Method: This is a type of research, namely laboratory experimental research. The specimens used were 24 disc plates with dimensions d = 50 $\pm$ 1 mm and t = 0.5 $\pm$ 0.1 mm (by ISO 20795 − 1 of 2013). The color change test was carried out using the VITA Easyshade—V® tool. Data were analyzed using the Oneway ANOVA test and the Tukey HSD test

Results: The highest average value of color change was in the soaking group in traditional herbal medicine 182 hours (55.19), followed by the traditional herbal medicine group 91 hours (50.00), the aquabides group 182 hours (8.76), and the lowest value in aquabides group 91 hours (6.79). There were quite significant differences among the four immersion groups ($p < 0.05$)

Conclusion: From this study, it can be concluded that there is an effect of immersion in the heat-polymerized acrylic resin denture base for 91 hours (1 year) and 182 hours (2 years) in traditional herbal medicine on color changes. The longer the immersion time for the heat-polymerized acrylic resin plate, the greater the color change value

Keywords: acrylic resin denture base, traditional herbal medicine, color change

TENSILE STRENGTH OF HEAT-CURED ACRYLIC RESIN DENTURE BASE IN COLA DRINKS

wiyanti[1*],Shafiyah Rufaidah[1],Marzia Magdalena Tetelepta[1]

[1]Dental Technology, Politeknik Kementerian Kesehatan Jakarta II, Indonesia

Introduction: Heat-cured acrylic resin is one of the most frequently used denture base materials. Heat-cured acrylic resin base material has good aesthetic properties, is easy to repair and process, and is affordable. Apart from that, heat-cured acrylic resin also has shortcomings in its mechanical and physical properties. Hence, it breaks easily when dropped due to the high chewing pressure received by the denture base. One of the mechanical properties of a heat-cured acrylic resin denture base is tensile strength. The tensile strength value of heat-cured acrylic resin is 52 MPa.

Objectives: To determine the tensile strength of heat-cured acrylic resin denture bases when soaked in cola drinks.

Method: This research used laboratory experimental methods with flat dumbell-shaped samples measuring 75mm $\times$ 10mm $\times$ 3mm based on ISO 527-1 of 2019. The samples consisted of 12 heat-cured acrylic resin plates, divided into two research groups: the group without Coca-Cola (control) and the group with Coca-Cola drink immersion. Tensile strength testing uses a Universal Testing Machine (UTM) by clamping both ends of the sample and then pulling until it breaks.

Results: After the tensile strength test, there was no significant difference ($p > 0.05$) between the aquabidest and the cola drink-soaking groups.

Conclusion: Based on the tests carried out, the data shows no change in soaking without Coca-Cola drinks or soaking using Coca-Cola drinks, and it can be concluded that Ho (accepted) and Ha (rejected).

Keywords: Coca-Cola, tensile strength, heat-cured acrylic resin

Investigating the Differences Between Preferred and Non-preferred Chewing Side in Occlusal Contact Areas and Occlusal Force While Monitoring the sEMG Activities During Different Occlusal tasks

林承斌 [1,2*],Tong-Mei Wang[1,2],Li-Deh Lin[1,2]

[1]Division of Prosthodontics, Department of Dentistry, National Taiwan University Hospital, , Taipei City, Taiwan

[2]Graduate Institute of Clinical Dentistry, School of Dentistry, National Taiwan University, Taipei, Taiwan

Introduction: Detecting occlusal contacts and forces is critical for mouth rehabilitation. However, current methods lack effectiveness in recording and adjusting occlusal contacts, especially for different prostheses and tasks. This study aims to correlate occlusal data from Dental Prescale II (DPS II) with surface electromyography (sEMG) of masseter muscles during various tasks to establish a practical diagnostic and evaluative approach.

Objectives: To devise an efficient diagnostic method for oral function and occlusal adjustment, particularly in implant prostheses and full mouth rehabilitation or temporomandibular joint diseases.

Method: Twenty-four healthy participants (12 men, 12 women) underwent occlusal data collection using DPS II and sEMG (Teethan®, MI, Italy) during visual feedback tasks (70%, 35% maximum voluntary contraction) and subjective force tasks. Data analysis focused on the correlation between occlusal data and sEMG activities, regardless of gender or preferred side.

Results: Muscle activities/bite force ratio exhibited no significant gender or preferred side differences. Bite force-EMG correlations were consistently high. Visual feedback tasks showed significant differences between heavy and light force instructions but not between preferred and non-preferred sides.

Conclusion: Muscle activities/bite force ratio remains consistent regardless of gender or preferred side. Participants successfully differentiated between heavy and light forces in all measured data, irrespective of instructions, but showed no significant side preference. In summary, this study underscores the feasibility of correlating occlusal data with muscle activities and highlights the efficacy of various force tasks in detecting differences, regardless of the preferred side.

Keywords: Dental Prescale II (DPS II), surface electromyography (sEMG), dental implant prosthesis, occlusal contact, occlusal pressure, occlusal force

Integrated Three-dimensional Virtual Patient Model for Dental Education and Prosthodontic Treatment Planning

KHAING MYAT[1*], Walter Yu Hang Lam[1]

[1]Restorative Dental Science, Faculty of Dentistry, The University of Hong Kong, Hong Kong SAR

Introduction: ase-based learning (CBL) effectively bridges theory and practice in dental education. In prosthodontics, dental prosthesis design requires considering various factors. Traditional mechanical articulators have limitations in providing accurate 3D face-teeth information. Three-dimensional (3D) virtual patient models (VPM) offer enhanced visibility of anatomical landmarks, enabling accurate teeth-face relationships and precise simulations for designing biomimetic dental prostheses.

Objectives: To develop a 3D virtual patient model and observe its usability in dental education.

Method: Maxillary and mandibular arches of a partially edentulous patient were scanned using an intraoral scanner or impressions were scanned with an optical laboratory scanner. A virtual facebow transferred the maxillary teeth into the correct position, creating a VPM. The patient's face was scanned using stereophotogrammetry, with and without the virtual facebow. The 3D images were superimposed using the iterative closest point algorithm in MeshLab v2020.3 software. The combined VPM allows 3D visualization of teeth-face relationships and serves as a treatment planning tool on MeshLab freeware.

Results: VPMs provide realistic patient simulations, enabling detailed analysis of facial landmarks and their relationship with teeth for harmonious dental prosthesis planning. Simulated jaw movements and dynamic occlusal contacts allow learners to design dental prostheses fitting patient's occlusion. VPMs in case planning generate enthusiasm among dental students

Conclusion: 3D virtual patient models could be an effective tool, offering realistic experiences for dental education and facilitating comprehensive prosthodontic treatment planning.

Keywords: Virtual patient: 3D patient model: Dental Education: Prosthodontics: Virtual Treatment Plan

DISCOLORATION OF HEAT-POLYMERIZED ACRYLIC RESIN DENTURE BASES AFTER SOAKING IN SALVADORA PERSICA CONTAINING MOUTHWASH

sastro[*],Rizky Amalina

[1]Dental Technology,Politeknik Kementerian Kesehatan Jakarta II

Introduction: Acrylic resin are used for denture bases for more than 60 years. Color stability is the ability of a material to maintain its original color. The color stability of acrylic resin affects the aesthetics of its users. One alternative material that can be used as a mouthwash is salvadora persica which is antimicrobial and have not contain harmful chemicals.

Objectives: this study was to determine the color change of hot polymerized acrylic resin denture base in soaking mouthwash containing salvadora persica.

Method: This study used 12 cylindrical specimens with a diameter of 50 $\pm$ 1 mm and a thickness of 1 $\pm$ 0.5 mm, 6 specimens for each aquabidest (controls groups) and mouthwash containing (treatment). Specimens were soaked for 7 days and placed in an incubator for 24 hours. Color testing used the Vita EasyShade tool. Data were analyzed using the Independent T-Test test.

Results: showed that there was a significant difference in color change ($p < 0.05$) between aquabidest immersion and mouthwash immersion containing salvadora persica.

Conclusion: The dimensional change of heat polymerization acrylic resin decreases with increasing concentration of salvadora persica. The use of mouthwash containing salvadora persica in denture users for a certain period of time can cause the color of the denture base to fade.

Keywords: hot polymerized acrylic resin, salvadora persica mouthwash, discoloration

Application of flipped Classroom in Oral Medicine Courses-Bridging the Translational Gap in Oral Care for Cancer Patients

WANG WEN-CHEN[1,2,3,4], Tang Jen-Yang [2,5]

[1]Division of Oral Pathology and Oral Maxillofacial Radiology, Department of Dentistry, Kaohsiung Medical University Hospital, Kaohsiug City, Taiwan

[2]Kaohsiung Medical University, Kaohsiug City, Taiwan

[3]Oral Maxillofacial Image Center, Kaohsiung Medical University, Kaohsiug City, Taiwan

[4]Center of cancer research, Kaohsiung Medical University, Kaohsiug City, Taiwan

[5]Department of Radiation Oncology, Kaohsiung Medical University Hospital, Kaohsiug City, Taiwan

Introduction: Oral Medicine is a course comprehensively applies students' knowledge base in oral pathology, dental radiography and oral diagnostics to cultivate the ability to formulate oral treatment plans for non-surgical patients. Interdisciplinary learning is also one of the aspects of holistic care that medical education attaches great importance to today. Evidences showed passive traditional teaching method is not easy to arouse students' interests. Students have insufficient integrated diagnostic capabilities, do not understand the treatment of complex patients and cannot empathize with them.

Objectives: Through a variety of flipped classroom methods to teach oral treatment plans for cancer patients to narrow the gap between classroom and clinical practice.

Method: Including to observe and learn in cancer care clinics and radiation oncology departments, fluoride application experiences, clinical case group discussions and diverse feedback from teacher and peers are integrated into the oral medicine courses.

Results: Group discussion method was the most rewarding (81.8%) by students; followed by interdisciplinary learning experience (68.2%); while workplace internships and fluoride application experiences in cancer clinics were much able to arouse students' empathy and learning knowledge integration (72.7%). Students believe that this course can help improve clinical logical thinking (90.9%), broaden their knowledge (90.9%).

Conclusion: Changing teaching methods can improve learning interest. 2. Senior dental students believe that case discussions and teacher's feedback are most helpful in improving clinical abilities. 3. Compared with empathy, senior students pay more attention to the improvement of professional abilities. Reflection and empathy should take root in lower grades.

Keywords: flipped classroom approach, group discussion, experiential education, interdisciplinary learning

Enhancing Oral Health Care Quality in Taiwan: A Dental Healthcare Workforce Assessment Study

Yi-Shing Shieh[1,2]

[1]Department of Dentistry, Tri-Service General Hospital, National Defense Medical Center. Taipei, Taiwan

[2]Taiwan Association of Dental Sciences, Taipei, Taiwan

Introduction: The government is committed to improving the oral health care quality for citizens, encompassing treatments, prevention, education, and community outreach.

Objectives: To conduct a comprehensive assessment of the dental healthcare workforce and evaluate the involvement of oral healthcare professionals in the future long-term care system, providing references for policy-making.

Method: A cross-sectional study design was used, employing surveys to investigate the current status and needs assessment of dental healthcare professionals in Taiwan.

Results: The survey had a 34.37% response rate, highlighting the disparities in dental workforce distribution between urban and rural areas, and exploring professionals' views on clinical work environment satisfaction, occupational injuries, and future practice plans.

Conclusion: The study recommends a gradual approach to dental healthcare workforce policies, strict control over dental school admissions, improving oral healthcare standards, and addressing urban-rural medical service imbalances to enhance workforce distribution and care quality.

Keywords: Taiwan, Oral Health, Dental Care, Workforce Assessment, Long-term Care

Administrative Assistance for Dental Specialty Physician Examination and Policy Development Evaluation

羅文良 Wen-liang Lo

Section of Oral and Maxillofacial Surgery, Department of Stomatology, Taipei Veterans General Hospital

College of Dentistry, National Yang-Ming Chiao Tung University

Introduction: To enhance healthcare service quality and public health, Taiwan's Ministry of Health and Welfare established a dental specialty physician system to encourage comprehensive clinical professional training.

Objectives: To explore the purpose of establishing the system, its development process, and its impact on improving healthcare service quality.

Method: Through policy analysis, expansion of specialty classifications, and the organization of specialty physician training and examination mechanisms.

Results: Since 1999, the number of specialties increased from 3 to 10, and by 2022, 5,028 physicians had obtained specialty certificates, indicating growth in specialized medical personnel.

Conclusion: The dental specialty physician system has effectively enhanced professional capabilities and healthcare quality. In response to demographic changes, there is a need for further development of new specialties to meet demand.

Keywords: Dental specialty system, Clinical training, Healthcare service quality, Specialty physician examination