2022 TU-HKU-FJMU International Symposium on Oral Health Sciences

-3rd Provincial Postdoc Symposium on Oral Health Sciences-

PROGRAM and ABSTRACT

November 17th (Thursday), 2022
Joint Zoom Meeting ID: 896 8293 6516
Pass code: 461580

Tohoku University Graduate School of Dentistry, Sendai, Japan
The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China
Fujian Medical University School of Stomatology, Fuzhou, China
Organizing Committee

**President**
Prof. Nobuhiro TAKAHASHI (Tohoku University)

**President**
Prof. Thomas FLEMMIG (The University of Hong Kong)

**President**
Prof. Jiang CHEN (Fujian Medical University)

**Committee member**

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Prof. Guang HONG, Dr. Lu SUN

*The University of Hong Kong*

Prof. Chun-Hung CHU, Ms Jasmine HO

*Fujian Medical University*

Prof. Youguang LU, Prof. Hui CHENG, Prof. Minkui LIN, Assoc Prof. Hao YU,
Mrs. Suyan YAN, Dr. Changyuan ZHANG

**Secretary-in-general**

Ms. Ting LIN (Fujian Medical University)

Ms. Yinting LIN (Fujian Medical University)
Welcome to 2022 TU-HKU-FJMU International Symposium on Oral Health Sciences

Dear Colleagues and Guests,

We are very pleased that the 2022 Tohoku University, The University of Hong Kong, and Fujian Medical University (TU-HKU-FJMU) are jointly organizing the International Symposium.

The annual TU-HKU-FJMU Symposium holds several key objectives. The constant sharing of ideas and knowledge promotes knowledge exchange among the three Universities. The continuous cooperation not only accelerates research progress, but also enhances the quality of our work and inspires new ideas leading to scientific breakthroughs.

Back in 2019, we successfully kicked off our first TU-HKU-FJMU International Symposium on Oral Health Sciences in Fuzhou, China. However, the Symposium had to be held in virtual mode due to the COVID-19 pandemic for the following two years. Coming to its fourth year, we are very delighted to announce that the Symposium of this year will be held on 17 November 2022. At this stage, although we have to deliver the Symposium in virtual mode once again, we are certain that it's a great opportunity for us to discuss the latest progressions inside oral health sciences as well as to look at current and future challenges in dental guidance, medicinal strategy, and interdisciplines therapy. Please mark your calendars and save the date for our conference.

The 2022 symposium comprise of invited lectures, luncheon meetings between professors and students, invited e-poster presentation, and young scientist presentations, with an emphasis on oral health science in the Asia-Pacific region. We look forward to deepening and widening our collaboration so as to promote research and educational quality in oral health sciences.

Dr. Nobuhiro Takahashi  
President, Symposium 2022  
Dean and Professor  
Graduate School of Dentistry,  
Tohoku University

Dr. Thomas Flemmig  
Co-President, Symposium 2022  
Dean and Professor  
Faculty of Dentistry,  
The University of Hong Kong

Dr. Jiang Chen  
Co-President, Symposium 2022  
Dean and Professor  
School of Stomatology,  
Fujian Medical University
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<td>Career paths for dental graduates in mainland China - Dr Hao YU</td>
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<td>Use of antimicrobial peptide for dentistry - Dr John NIU</td>
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<td>Reducing expression of SFRP3 and SFRP4 in TMJoa model - Dr Senxin CAI</td>
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<td>Development of osteoblast-scaffold construct for bone regeneration therapy - Dr Venkata VENKATAIAH</td>
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<td>Nanosilicate-functionalized PCL orchestrates bone regeneration - Dr Xiongchong XU</td>
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<td>Elucidating the mechanisms between oral and systemic health - Dr Taro KUSAMA</td>
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8:30-9:00 Opening Ceremony
Chair Person: Professor Guang HONG
Tohoku University Graduate School of Dentistry, Sendai, Japan
Dean and Professor Nobuhiro TAKAHASHI
Tohoku University Graduate School of Dentistry, Sendai, Japan
Dean and Professor Thomas FLEMMIG
The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China
Dean and Professor Jiang CHEN
Fujian Medical University School of Stomatology, Fuzhou, China

9:00-9:45 Section I: Invited Lecture series 1
Career Paths for Dental Graduates
(12 mins presentation, 3 mins QA)
Chair Person: Associate Professor Hao YU
Fujian Medical University School of Stomatology, Fuzhou, China

S1-1 Career paths for dental graduates in mainland China
S1-2 Career paths for dental graduates in Hong Kong SAR, China
S1-3 Career paths for dental graduates in Japan

9:45-10:30 Section I: Invited Lecture series 2
Oral Medicine and Endodontics
(12 mins presentation, 3 mins QA)
Chair Person: Dr. Liwu ZHENG
The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

S1-4 Dental application of ultraviolet-A induced photochemical and photobiological reactions
S1-5 Oral lichen planus and oral lichenoid lesions: A clinical update
S1-6 Orthodontics and bone - demystify their relationship in clinical practice
10:30-11:15  **Section I: Invited Lecture series 3**
Orthodontics and Digital Dentistry
(12 mins presentation, 3 mins QA)

*Chair Person:* Dr. Hideki KITAUR
*Tohoku University Graduate School of Dentistry, Sendai, Japan*

S1-7 Accelerated orthodontic tooth movement by micro-osteoperforations
S1-8 Occlusal contact trueness affected by CAD/CAM ceramic materials
S1-9 Orthodontics and bone: Demystify their relationship in clinical practice

11:15-12:00  **Section I: Invited Lecture series 4**
Restorative Dentistry
(12 mins presentation, 3 mins QA)

*Chair Person:* Dr. Tammy DUANGTHIP
*The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China*

S1-10 A paradigm shift in caries management
S1-11 Application of comfort therapy concept in dental implantation
S1-12 Biomechanical and mechanobiological consideration for dental implant treatments

12:00-13:00  **Satellite Section I: Meet a Professor** (Pre-registration required)

BR1: Professor Guang HONG (*Prosthodontics; TU*)
BR2: Professor Ken OSAKA (*Geriatric Dentistry; TU*)
BR3: Professor Masahiro SAITO (*Operative Dentistry and Endodontics; TU*)
BR4: Professor Cynthia Kar Yung YIU (*Paediatric Dentistry; HKU*)
BR5: Professor Richard Yuxiong SU (*Oral and Maxillofacial Surgery; HKU*)
BR6: Professor Bin SHI (*Oral and Maxillofacial Surgery; FJMU*)
BR7: Professor Xiaojing HUANG (*Endodontics and Restorative Dentistry; FJMU*)
13:00-14:30 **Satellite Section II: E-Poster Presentation**

BR1: Community Social Dentistry  
*(Dent Public Health, Forensic Dentistry, Preventive, Pediatric, Orthodontics)*  
BR2: Rehabilitation Dentistry  
*(Anatomy, Tissue biology, Biomaterials, Tissue Engineering, Pros, Geriatric Dentistry)*  
BR3: Ecological Dentistry / Dental Disease management / Innovative Dentistry  
*(Microbiology, Biochemistry, Operative Dentistry, Endodontics, Periodontology)*  
*(Physiology, Pharmacology, Pathology, Oral Med, Radiology, OMFS, Anesthesia)*  
*(Dent Edu, Medical Communication, Global and Interdisciplinary Collaboration)*

14:30-14:40 Break

14:40-16:10 **Section II: Young Scientist Invited Lectures**  
(10 mins presentation, 5 mins QA)  
*Chair Person: Dr. Iris YIN*  
*The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China*

S2-1 Use of silver nanoparticles in caries prevention  
S2-2 Use of antimicrobial peptide for dentistry  
S2-3 Reducing expression of SFRP3 and SFRP4 in TMJOA model  
S2-4 Development of osteoblast-scaffold construct for bone regeneration therapy  
S2-5 Nanosilicate-functionalized PCL orchestrates bone regeneration  
S2-6 Elucidating the mechanisms between oral and systemic health

16:30-17:00 **Closing and Award Ceremony**  
Assistant Dean and Professor Guang HONG  
*Tohoku University Graduate School of Dentistry, Sendai, Japan*
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Dr. Hao YU
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S1-2
Career paths for dental graduates in Hong Kong SAR, China

Dr. Chun Hung CHU
Professor and Associate Dean, The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

S1-3
Career paths for dental graduates in Japan

Dr. Guang HONG
Professor and Assistant Dean, Tohoku University Graduate School of Dentistry, Sendai, Japan
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Dr. Keisuke NAKAMURA
Associate Professor, Tohoku University Graduate School of Dentistry, Sendai, Japan

S1-5
Oral lichen planus and oral lichenoid lesions: A clinical update

Dr. Liwu ZHENG
Associate Professor, The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

S1-6
Regenerative endodontics for adult patients with immature apices

Dr. Jia HU
Senior Assistant Professor, Fujian Medical University School of Stomatology, Fuzhou, China
Section I
Invited Lecture series 3: Orthodontics and Digital Dentistry

S1-7
Accelerated orthodontic tooth movement by micro-osteoperforations

Dr. Hideki KITAJIRI
Associate Professor, Tohoku University Graduate School of Dentistry, Sendai, Japan

S1-8
Occlusal contact trueness affected by CAD/CAM ceramic materials

Dr. Yu PAN
Senior Assistant Professor, Fujian Medical University School of Stomatology, Fuzhou, China

S1-9
Orthodontics and bone - demystify their relationship in clinical practice

Dr. Yifan LIN
Clinical Assistant Professor, The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China
Section I
Invited Lecture series 4: Restorative Dentistry

S1-10
A paradigm shift in caries management

Dr. Tammy DUANGTHIP
Senior Clinical Practitioner, The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

S1-11
Application of comfort therapy concept in dental implantation

Dr. Qun LEI
Senior Assistant Professor, Fujian Medical University School of Stomatology, Fuzhou, China

S1-12
Biomechanical and mechanobiological consideration for dental implant treatments

Dr. Nobuhiro YODA
Assistant Professor, Tohoku University Graduate School of Dentistry, Sendai, Japan
Satellite Section I
Meet a Professor

BR-1
Dr. Guang HONG
Professor, Tohoku University Graduate School of Dentistry, Sendai, Japan

BR-2
Dr. Ken OSAKA
Professor, Tohoku University Graduate School of Dentistry, Sendai, Japan

BR-3
Dr. Masahiro SAITO
Professor, Tohoku University Graduate School of Dentistry, Sendai, Japan

BR-4
Dr. Cynthia Kar Yung YIU
Professor, The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

BR-5
Dr. Richard Yuxiong SU
Professor, The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

BR-6
Dr. Bin SHI
Professor, Fujian Medical University School of Stomatology, Fuzhou, China

BR-7
Dr. Xiaojing HUANG
Professor, Fujian Medical University School of Stomatology, Fuzhou, China
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BR-1 COMMUNITY SOCIAL DENTISTRY

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Dr. Veena Wenqing XU
*The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China*

P-2
Oral health effects of antipsychotics on psychiatric inpatients in Medan

Dr. Fialdy Josua PATTIRADJAWANE
*University of Sumatera Utara, Faculty of Dentistry, Sumatera, Indonesia*

P-3
Dental fear status of children in outreach service using SDF

Dr. Ivy Guofang SUN
*The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China*

P-4
Knowledge, practices and attitudes towards silver diamine fluoride therapy among dentists in Japan: A mixed methods study

Dr. Hollis Haotian CHAI
*The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China*

P-5
NaCl is able to reduce the erosive dentin wear

Dr. Yiyin CHEN
*Fujian Medical University School of Stomatology, Fuzhou, China*

P-6
Application timing of protease inhibitors on dentin erosion

Dr. Xiujiao LIN
*Fujian Medical University School of Stomatology, Fuzhou, China*
P-7
A study of tooth wear and chronic unpredictable mild stress

Dr. Yuxuan LIN
Fujian Medical University School of Stomatology, Fuzhou, China

P-8
WNT pathway promotes chemoresistance of OSCC via regulating transport

Dr. Kairui SUN
Fujian Medical University School of Stomatology, Fuzhou, China

P-9
MDM4 regulates metabolic reprogramming in TP53-mutated oral squamous carcinoma cells

Dr. Yuxiang YAN
Fujian Medical University School of Stomatology, Fuzhou, China
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E-poster Presentation

BR-2 REHABILITATION DENTISTRY

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Dr. Alice Kit Ying CHAN
The University of Hong Kong, Faculty of Dentistry, Hong Kong SAR, China

P-2
Graphene oxide-laden injectable hydrogel for craniofacial tissue regeneration

Dr. Sangjin LEE
The University of Hong Kong, Faculty of Dentistry, Hong Kong SAR, China

P-3
A new method for making the implant guide

Dr. Pingping CAI
Fujian Medical University School of Stomatology, Fuzhou, China

P-4
Influence of intraoral conditions on the accuracy of implant impressions

Dr. Yongqing GUO
Fujian Medical University School of Stomatology, Fuzhou, China

P-5
Molecular mechanism of WNT7A in oral squamous cell carcinoma

Dr. Yi XIAO
Fujian Medical University School of Stomatology, Fuzhou, China

P-6
Identification and validation of autophagy-related genes in hBMSCs’ osteogenic differentiation

Dr. Yan LI
Fujian Medical University School of Stomatology, Fuzhou, China
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Dr. Sara SAMMOUR
Tohoku University Graduate School of Dentistry, Sendai, Japan
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BR-3 ECOLOGICAL DENTISTRY / DENTAL DISEASE MANAGEMENT / INNOVATIVE DENTISTRY

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High-resolution taxonomic and functional profiling of microbiota in low-biomass samples

Dr. Shi HUANG
The University of Hong Kong, Faculty of Dentistry, Hong Kong SAR, China

P-2
Impact of chronic apical periodontitis on systemic diseases of rats

Dr. Yufang LUO
Fujian Medical University School of Stomatology, Fuzhou, China

P-3
Efficacy of different tooth-bleaching regimens: A randomized controlled clinical trial

Dr. Bingjie ZHONG
Fujian Medical University School of Stomatology, Fuzhou, China

P-4
Tofacitinib alleviates experimental primary sjögren’s syndrome

Dr. Yanjun LIN
Fujian Medical University School of Stomatology, Fuzhou, China

P-5
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Dr. Miao CHENG
Tohoku University Graduate School of Dentistry, Sendai, Japan
P-6
Fatty infiltration of lateral pterygoid muscle with anterior disk displacement

Dr. Shuo WANG
Fujian Medical University School of Stomatology, Fuzhou, China

P-7
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Dr. Aobo MA
Tohoku University Graduate School of Dentistry, Sendai, Japan

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Growth promotion factors of ECC-associated bacterium, Scardovia wiggsiae

Dr. Mai KAMEDA
Tohoku University Graduate School of Dentistry, Sendai, Japan
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Section II
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Use of silver nanoparticles in caries prevention
Dr. Iris Xiaoxue YIN
The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

S2-2
Use of antimicrobial peptide for dentistry
Dr. John Yun NIU
The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

S2-3
Reducing expression of SFRP3 and SFRP4 in TMJOA model
Dr. Senxin CAI
Fujian Medical University School of Stomatology, Fuzhou, China

S2-4
Development of osteoblast-scaffold construct for bone regeneration therapy
Dr. Venkata VENKATAIAH
Tohoku University Graduate School of Dentistry, Sendai, Japan

S2-5
Nanosilicate-functionalized PCL orchestrates bone regeneration
Dr. Xiongcheng XU
Fujian Medical University School of Stomatology, Fuzhou, China

S2-6
Elucidating the mechanisms between oral and systemic health
Dr. Taro KUSAMA
Tohoku University Graduate School of Dentistry, Sendai, Japan
S1-1
Career paths for dental graduates in mainland China

Dr. Hao YU
Associate Professor,
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:
In mainland China, there are approximately 100 colleges and universities that recruit dental graduates majoring in stomatology. Dental graduates have various choices of career paths after graduation. The aim of this lecture is to provide a framework for dental students to use so that they can explore various opportunities after dental school.

Biography:
Dr Hao Yu is an associate dean and an associate professor (Prosthodontics) at the School and Hospital of Stomatology of Fujian Medical University, and adjunct professors at the dental schools of University of Zurich and Nagasaki University. He is the vice president of Fujian Prosthodontics and Dental Materials Society, the vice president of Western Returned Scholars Association, Fujian Medical University, a member of standing committee of Chinese Prosthodontics Society, a committee member of Chinese Dental Materials Society, a council member of Fujian Stomatological Association, and a council member of Fujian Physician Association. He is elected as a Fellow of International College of Dentists (FICD). Dr Yu’s research interests include dental materials, tooth bleaching, prevention of dental erosion, and dental education. Dr Yu published more than 100 peer reviewed journal articles and abstracts in international conferences. He is a Guest Editor of BioMed Research International and Frontiers in Materials. He received Science & Technology Award for Young Talents of Fujian Province in 2021.
Career paths for dental graduates in Hong Kong SAR, China

Dr. Chun Hung CHU
Professor,
The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

Abstract:
Dental graduates in Hong Kong have a variety of career paths to choose from based on their work desire in such as clinical practicing, further studying and training, or conducting research. The Faculty of Dentistry, the University of Hong Kong (HKU) is the only institution to provide dental education and undergraduate dental degree in Hong Kong. After 6-year learning and training, HKU dental graduates commonly secure gainful employment in the field of dentistry shortly after graduation. In Hong Kong, a major job option opens to dental graduates is practicing dentistry in private sector. They can choose to practice solo or in partnership with other dentists. Besides, dental graduates can join the Department of Health as a government dentist or practice as a hospital-based (non-governmental) dentist in the Prince Philip Dental Hospital (PPDH, the only dental hospital in Hong Kong) or in the maxillofacial dental units of general hospitals. Instead of jumping into job market, dental graduates can choose to have advanced clinical training in the discipline that they are interested in. A few dentists join the on-job advanced clinical training in the Development of Health, whereas most dentists pursue their clinical training through a fulltime 3-year Master degree programme. Those who find their interest in conducting research and want to work in academia often go for training as MPhil or PhD (both full-time and part-time) students. The aim of this talk is to help dental students to gain an insight into various career paths and to prepare for further career development after graduation.

Biography:
Dr Chu is a Professor and Associate Dean of the Faculty of Dentistry, The University of Hong Kong (HKU) with a demonstrated history of working in the clinical dentistry, administration and leadership, clinical and basic research, and higher education. He is the President, the Society of Preventive Dentistry of Hong Kong (2021-23), the President, the Asia Academy of Preventive Dentistry (2021-23), a Member, the FDI Public Health Committee (2021-24), and the Immediate Past President, the South East Asians Association for Dental Education (2021-23). Dr Chu practiced dentistry for 15 years and was the dental surgeon in charge of the HKU Health Service before he became an academics. He is a fellow of the Hong Kong College of Dental Surgeons, a fellow of the Hong Kong Academy of Medicine and a registered specialist in Family Dentistry in Hong Kong. Through overseas examinations, Dr Chu became a fellow of the Royal Australasians College of Dental Surgeons (RACDS) in Sydney, a dental fellow of the Royal College of Surgeons in Edinburgh (RCSEd) UK, and a diplomate of the American Board of General Dentistry in Chicago. He lectured widely in international conferences. Through his exceptional achievements in clinical care, teaching and research, Dr Chu was elected as a fellow of the International College of Dentists, a fellow of the Faculty of Dental Trainers RCSEd and a fellow of the Academy of Dental Materials, respectively. He published extensively with a Scopus h index of 40. He is an editor of several SCI journals.
S1-3  
Career paths for dental graduates in Japan

Dr. Guang HONG  
Professor,  
Tohoku University Graduate School of Dentistry, Sendai, Japan

Abstract:
In Japan, 29 dental colleges or universities (11 national, 1 public, 17 private) in Japan. The almost case of the way of entering them is after high school. And no matter which university students enter, they must take a set six-year curriculum. When students complete all proper processes of dental school, they could allow taking a Dental national examination. In my presentation, I will provide the information of the career paths of dental students in Japan, and discuss how to bring out the potential of the students.

Biography:
Dr Hong is an Assistant Dean of Graduate School of Dentistry, Tohoku University, and Professor and Chair of Division for Globalization Initiative, and Director of office of international affairs at the Liaison Center for Innovative Dentistry. Doctor Hong finished Ph.D. course at Hiroshima University Graduate School of Dentistry in 2003. Currently, Doctor Hong is Executive board member of Japanese Society for Dental Materials and Devices, Associate Editor of Dental Materials Journal, and Director of The Japan Denture Care Society. He also is Committee Member of International Standardization Accelerated Project Japanese Ministry of Economy, Trade and Industry and expert of ISO (International Organization for Standardization) and DIN (German Institute for Standardization). His research is the elucidation of the rheology properties of dental materials, and development of functionality new dental materials and education system. At present, his research is mainly concerned with international standard institution; improvement and development of oral care and denture care materials, metal-free dental implant materials and development of dental materials and education system according to the Industry-Academia-Government collaboration. He published more than 80 paper to SCI journals. He received Tohoku University the Presidential Prize for Educational Excellence in 2019.
Section I
Invited Lecture series 2: Oral Medicine and Endodontics

S1-4
Dental application of ultraviolet-A induced photochemical and photobiological reactions

Dr. Keisuke NAKAMURA
Associate Professor,
Tohoku University Graduate School of Dentistry, Sendai, Japan

Abstract:
Ultraviolet-A (UVA) is defined as an electromagnetic wave having a wavelength between 315 and 400 nm. Owing to its high photon energy, UVA causes various photochemical and photobiological reactions. In our laboratory, we have studied beneficial effects of UVA in dentistry. For instance, we have developed an antimicrobial technique in which UVA irradiation of hydrogen peroxide is performed to generate hydroxyl radicals. As hydroxyl radicals are potent oxidant, they cause lethal oxidative damage on bacterial cells even in biofilm. This antimicrobial technique can be adjunctively used in treatment for dental infectious diseases. Another example is to use UVA to trigger tertiary dentin formation. We found that tentative and mild oxidative stress was induced in dental pulp when a rat tooth was irradiated with UVA. As a result, tertiary dentin was formed during the tissue repair process. This effect may be applicable to protect vital dental pulp in caries treatment. In this lecture, these topics will be discussed.

Biography:
Keisuke Nakamura is Associate Professor at the Department of Advanced Free Radical Science, Tohoku University Graduate School of Dentistry in Japan. He received undergraduate training at Tohoku University School of Dentistry (DDS, 2002) and postgraduate education in prosthodontics and dental material science at Tohoku University Graduate School of Dentistry (PhD, 2006). He joined a research project for 1 year at Institute of Odontology, the University of Gothenburg in Sweden in 2007. Then, he started his second postgraduate project on dental ceramic material at the University of Gothenburg and received PhD degree in 2015. His PhD thesis was awarded as “Best Thesis 2015 at Institute of Odontology”. He has also been involved in a research project at Tohoku University since 2008, where antimicrobial techniques utilizing free radicals are developed for treatments of dental infectious diseases. His research achievements were awarded the “Research Encouragement Award” from Intelligent Cosmos Scientific Foundation in 2012.
Abstract:
Oral lichen planus (OLP) is a chronic immunological disorder affecting the oral mucosa. The WHO set the diagnostic criteria for OLP in 1978 and classify it as oral potentially malignant disorders. The oral lichenoid lesions (OLL) and oral lichenoid dysplasia (OLD) are not distinguished from OLP in this criteria while they share similar clinical and histological features. In 2003 a modified WHO criteria attempting to differentiate OLP, OLL and OLD was proposed. However, the debate on whether these lesions are different diseases or a continuum of the same condition has never ended. Under certain circumstance, the term “oral lichenoid conditions” is used to club these lesions. Here a clinical update of the diagnosis, management and malignant transformation of the oral lichenoid conditions is discussed.

Biography:
Dr. Li-wu ZHENG, DDS, MD, PhD, is a clinical associate professor of Oral Medicine at the Faculty of Dentistry, the University of Hong Kong, and an adjunct associate professor in School of Dental Medicine, University Pennsylvania. He serves as the undergraduate programme director of Oral & Maxillofacial Surgery, chief examiner of BDS IV, and chairman of PBL problem development group (BDS V). Dr. Zheng is a member of Chinese Specialty Committee on Oral Mucosal Diseases and American Academy of Oral Medicine, and serves as section editor in several reputed dental and medical journals. The current research interest of Dr. Zheng is AI in prediction of malignant transformation of oral mucosal lesions. He supervised and is supervising 15 PhD students, and has published a total of 2 books, 96 peer reviewed journal articles, 2 dissertations, and 7 book chapters. To promote Oral Medicine in China, Dr Zheng organized the translation and publication of 2 authoritative text books with People’s Medical Publishing House.
S1-6
Regenerative endodontics for adult patients with immature apices

Dr. Jia HU
Senior Assistant Professor,
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:
The difficulty in endodontic treatments of adult patients with immature apices lies in the formation of a three-dimensional apical sealing to prevent reinfection. In 2013, the American Association of Endodontics (AAE) first issued guidelines for regenerative endodontic procedures, and updated them to promote the regenerative treatment of infected immature permanent teeth in children and adolescents in 2016, 2018, and 2021. Can the concept of regenerative endodontics be extended to revitalize immature permanent teeth with pulp necrosis or periapical lesion in adults? Here the clinical efficacy is analysed to explore the question if regenerative endodontic therapies should be developed for dental pulp and/or dentin regeneration in adults with immature apices.

Biography:
Dr Jia Hu works as a senior assistant professor at the School and hospital of Stomatology, Fujian Medical University. She obtained her BDS to MDD degree from the School of Stomatology, Peking University. Her research focuses on the regenerative endodontics. Dr Hu is a Youth member of the Endodontic Professional Committee, Fu Jian Province. She participated in the translation and publication of 2 books and held 4 scientific research projects.
S1-7
Accelerated orthodontic tooth movement by micro-osteoperforations

Dr. Hideki KITaura
Associate Professor,
Tohoku University Graduate School of Dentistry, Sendai, Japan

Abstract:
A key concern for orthodontics is the lengthy duration of orthodontic treatment. Therefore, shortening the duration of orthodontic treatment is an active research area. Many methods have been tested to accelerate tooth movement, including biological, mechanical, physical and surgical approaches. Surgical procedures are the most consistent and achieve the desired results. Perforation of the alveolar bone is a surgical method that is termed micro-osteoperforations (MOPs), and MOPs can be used to accelerate orthodontic tooth movement. In our previous study, compression force in orthodontic tooth movement induces expression of TNF-α and induced osteoclast formation and bone resorption. We also found that TNF-α plays important roles in an orthodontic tooth movement mouse model by using both TNF receptor-1 and TNF receptor-2 deficient (KO) mice. Here, mechanism of accelerated orthodontic tooth movement by micro-osteoperforations is introduced.

Biography:
Dr. Hideki Kitaura is an associate professor of Division of Orthodontics and Dentofacial Orthopedics, Tohoku University Graduate School of Dentistry. The current research interest of Dr. Kitaura is analysis of bone metabolism in orthodontic treatment of patients with lifestyle-related diseases, analysis of TNF-α-mediated osteoclast formation and bone resorption and study of accelerated orthodontic tooth movement. He supervised more than 20 PhD students and is supervising 7 PhD students and published more than 150 peer reviewed articles.
S1-8
Occlusal contact trueness affected by CAD/CAM ceramic materials

Dr. Yu PAN
Senior Assistant Professor, 
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:
The purpose of this self-controlled clinical study was to evaluate the trueness of occlusal contact affected by six ceramic materials during the chairside manufacturing process. Ten participants were selected for this study. InCoris TZI (ZIR), Celtra Duo (CD), IPS e.max (EMA), UPCERA LICI (LC), Vita enamic (ENA), UPCERA RUNCI (RC) were used to produce crowns for everyone by CEREC chairside CAD/CAM system. The milling trueness, postprocessing trueness and clinical adjustment of occlusal contact were quantitatively analysed by the ATOS high-precision scanner and Geomagic reverse engineering software. The results showed that milling trueness of ZIR was worst (p<0.05). Except for ENA, the postprocessing trueness of ZIR was significantly lower than the other four groups (p<0.05). As for clinical adjustment, all groups were adjusted. To be specific, ZIR was lower than CD and ENA. Six chairside ceramic blocks need to be designed with different negative occlusal offset to suite the material of the restoration for better manufacturing quality. ZIR required the least amount of compensation. Similar results can be obtained for LC and RC by applying the EMA and ENA CEREC chairside procedures respectively.

Biography:
Dr Yu Pan (BDS, PhD) is a senior assistant professor at the Department of Prosthodontics, School and Hospital of Stomatolgy, Fujian Medical University. She received a PhD degree of Prosthodontics from Fujian Medical University. Dr Pan is a youth committee of Chinese Specialty Committee on Prosthodontics and Dental materials. The current research interests of her are the accuracy of dental digital workflow and the biocompatibility of dental materials.
S1-9
Orthodontics and bone - demystify their relationship in clinical practice

Dr. Yifan LIN
Assistant Professor,
The University of Hong Kong Faculty of Dentistry, Hong Kong SAR, China

Abstract:
Orthodontics is inextricably linked to the bone. The homeostatic function of bone in a healthy periodontal environment is critical for successful orthodontic treatment. Numerous strategies have been developed to promote the growth, remodelling and regeneration of bone. Meanwhile, the mechanism of orthodontic tooth movement has been extensively studied. From the perspective of a clinical orthodontist, the presentation will provide an overview of the various bone biological processes that are relevant to clinical practice. Additionally, how orthodontists use orthodontic appliances to promote bone growth, remodelling, and regeneration, and ultimately achieve successful orthodontic treatment, will be discussed.

Biography:
Dr Yifan LIN (BDS, SMD, PhD, MOrth RCSEd) has been a Clinical Assistant Professor and the Deputy Undergraduate Programme Director in Orthodontics at the Faculty of Dentistry, the University of Hong Kong, since 2019. She received a Doctor of Stomatological Medicine in Orthodontics from Peking University and a PhD degree from the University of Hong Kong. Dr. Lin’s research interests include bone biology, periodontal regeneration, and management of cleft lip and palate.
Abstract:
Tooth decay is a silent epidemic affecting more than two billion people worldwide. Underserved and vulnerable populations encounter persistent and systemic barriers to accessing restorative dental care. A paradigm shift in caries management using a non-restorative approach has been advocated. Studies have shown that silver diamine fluoride (SDF) is effective in arresting dental caries in primary teeth and root caries in elders. SDF can be a viable treatment alternative for caries control due to its simplicity to use, affordability, and accessibility. Recently, SDF has been added to the new section for dental preparations in the WHO Model List of Essential Medicines. This establishment is a crucial development to tackle the burden of dental caries and oral health inequalities. This lecture will discuss a paradigm shift in caries management focusing on SDF treatment for caries control. Clinical applications and indications of SDF use will be presented and discussed.

Biography:
Dr. Duangthip is a Senior Clinical Practitioner and Undergraduate Program Director in Cariology, The University of Hong Kong. She was conferred Doctor of Philosophy (PhD) and Master of Science in Community Dentistry from the University of Hong Kong, and Doctor of Dentistry (Dr. med. dent.) from University of Bern, Switzerland, and Doctor of Dental Surgery (DDS) from Chulalongkorn University, Thailand. She is a Fellow of the Royal College of Dental Surgeons of Thailand (FRCDT) and a Member of the Royal Australasian College of Dental Surgeons (MRACDS) in Dental Public Health. She was an invited speaker in several international conferences such as World Congress on Preventive Dentistry and the South East Asia Association for Dental Education (SEAADE). Dr. Duangthip presented her research at many international conferences and published more than 55 peer-reviewed journals, including the first author in Journal of Dental Research with H-index 18 and more than 1,000 citations (Scopus). Her research interest focuses on caries management and community dental care. Currently, she is an Associate Editor in BMC Oral Health and Assistant Specialty Chief Editor in Frontiers in Oral Health. Last but not least, Dr. Duangthip is a Vice President of the Pediatric Oral Health Research Group of the International Association for Dental Research. She is also a Vice President of Society of Preventive Dentistry of Hong Kong.
S1-11
Application of comfort therapy concept in dental implantation

Dr. Qun LEI
Senior Assistant Professor,
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:
"Comfortable treatment" is a more humanized medical method, which can greatly reduce the patient's nervousness and a series of physiological changes caused by fear. Application of comfort therapy in dental implantation can relieve patients' anxiety about dental examinations and surgery, improve patients' cooperation, and shorten the time for medical treatment. It enables the patient to complete the entire surgical procedure in a relatively comfortable and quiet state, improving patient satisfaction about the treatment.

Biography:
Dr Qun Lei (DDS, MD, PhD) is a senior assistant professor in dental implantation at school and hospital of Stomatology, Fujian Medical University. She is a member of the Oral Implantology Committee of the Chinese Stomatological Association.
Biomechanical and mechanobiological consideration for dental implant treatments

Dr. Nobuhiro YODA
Senior Assistant Professor,
Tohoku University Graduate School of Dentistry, Sendai, Japan

Abstract:
Recent digital workflow in dental implant treatment is remarkably updated. On the other hand, it is still difficult to make an implant treatment plan with prediction of future peri-implant bone changes after loading. Appropriate control of bone remodeling can contribute to the preservation and strengthening of peri-implant bone. Among several biomechanical and mechanobiological factors affecting the bone remodeling, the functional loading on implant can be a primary factor. Therefore, we have conducted the in vivo real-time measurement of functional load on implant. Also, we performed the patient-specific finite element analysis based on CT images and actual measured load data. This combined in vivo and in silico simulation studies enabled to establish the patient-specific peri-implant bone remodeling algorithm. This algorithm was further applied to the predictive simulation of future peri-implant bone changes, which can contribute to optimizing the implant prostheses and implant configuration, and also obtaining favorable long-term implant treatment outcome.

Biography:
Dr Nobuhiro Yoda is Senior Assistant Professor at Division of Advanced Prosthetic Dentistry, Tohoku University Hospital in Japan. He received undergraduate training at Tohoku University School of Dentistry (DDS, 2003) and postgraduate education at Tohoku University Graduate School of Dentistry (Ph.D., 2007). He joined at Faculty of Engineering and Information Technologies at the University of Sydney as a visiting researcher from 2014 to 2016 and started some collaborative research regarding the dental biomechanics bone remodeling simulation. He has also been working at the Dental Implant Center in Tohoku University Hospital as a dentist and certificated as a Prosthodontic Specialist and a Dental Implant Specialist.
Satellite Section I
Meet a Professor

BR-1

Dr. Guang HONG (MD, DDS, PhD)
Professor,
Tohoku University Graduate School of Dentistry, Sendai, Japan

Biography
Prof Guang Hong is an Assistant Dean of Graduate School of Dentistry, Tohoku University, and the Professor and Chair of Division for Globalization Initiative. He is also the Director of Office of International Affairs at the Liaison Center for Innovative Dentistry. Prof Hong was conferred his PhD from the Hiroshima University Graduate School of Dentistry in 2003. Prof Hong is an executive board member of the Japanese Society for Dental Materials and Devices and an associate editor of the Dental Materials Journal. He serves as the Director of The Japan Denture Care Society. He is also a committee member of the International Standardization Accelerated Project Japanese Ministry of Economy, Trade and Industry and an expert of the International Organization for Standardization (ISO) and the German Institute for Standardization (DIN). Prof Hong’s research interest includes elucidation of the rheology properties of dental materials, the development of functionality of new dental materials and dental education. His research is mainly concerned with international standard institution; improvement and development of oral care and denture care materials, metal-free dental implant materials and development of dental materials and dental education system according to the Industry-Academia-Government collaboration. He published more than 80 papers with Science Journal Impact Factor. He received the Tohoku University Presidential Prize for Educational Excellence in 2019.
BR-2

Dr. Ken OSAKA (MD, MPH, PhD)
Professor,
Tohoku University Graduate School of Dentistry, Sendai, Japan

Biography
Prof Ken Osaka is a professor at the Department of Community and International Health, Graduate School of Dentistry. His research interests include health inequality, association of oral health and other systemic disease and long-term care of the elderly. He is also a professor of the International Research Institute of Disaster Sciences (IRIDeS), the Smart Aging Research Organization (SARO) and the Tohoku Medical Megabank Organization (ToMMo). He is the senior researcher, Infectious Disease Surveillance Center, The National Institute of Infectious Diseases, Tokyo. Prof Osaka received his MMedSc and PhD from the Graduate School of Medicine, The University of Tokyo, Tokyo. He was a visiting researcher, Takemi Fellow, Department of International health and population Harvard School of Public Health. He worked in the Ministry of Health, Labor and Welfare, Tokyo as the Deputy Director, Division of the Health for the elderly. He was the person in charge of the revision of the law of the long-term care insurance of the elderly in Japan, introducing the program of the oral function improvement, physical activity improvement and nutritional consultation into the system.
BR-3

Dr. Masahiro SAITO (DDS, PhD)
Professor,
Tohoku University Graduate School of Dentistry, Sendai, Japan

Biography

Prof Masahiro Saito is the Vice-Chair of the Clinical Research Committee and the Vice-Director of the Clinical Research, Innovation and Education Center. He also serves as the Special Assistant of Hospital Director of the Tohoku University Hospital and the Vice-Director of Dental Division of the Tohoku University Hospital. Prof Saito received his DDS from the Kanagwa Dental College, Japan and PhD from the Kanagawa Dental College, Japan. Prof Saito started her career as an instructor at the Department of Operative Dentistry, the Kanagawa Dental College. He was a visiting fellow of the School of Medicine, Department of Pathology, University of Washington, USA. He then joined as an instructor at the Department of Operative Dentistry and Endodontics, Kanagawa Dental College and became an assistant Professor, Department of Operative Dentistry and Endodontics, Kanagawa Dental College. In 2006, Prof Saito joined as an assistant professor at the Department of Molecular and Cellular Biochemistry, Osaka University Graduate School of Dentistry. He was an associate professor, Faculty of Biological Science, Tokyo University of Science and a professor at the Division of Ecological Dentistry, Department of Restorative Dentistry, Tohoku University, Graduate School of Dentistry. He was the Chief of the Department of Endodontics, Tohoku University Hospital.
Dr. Cynthia Kar Yung YIU (BDS, MDS, PhD, FHKAM, FCDSHK)  
Professor,  
The University of Hong Kong, Faculty of Dentistry, Hong Kong SAR, China

Biography

Prof Cynthia Yiu is the Associate Dean in Clinical Affairs and a Clinical Professor in Paediatric Dentistry, Faculty of Dentistry, The University of Hong Kong. She received the Bachelor of Dental Surgery degree from King’s College, University of London, United Kingdom; and completed her Master of Dental Surgery degree in Paediatric Dentistry and Doctor of Philosophy degree from HKU. Prof Yiu is a Fellow of the Hong Kong Academy of Medicine in Dental Surgery and a Fellow of the College of Dental Surgeons of Hong Kong in the Specialty of Paediatric Dentistry. She joined the Faculty of Dentistry, The University of Hong Kong as a Clinical Dental Surgeon and became a Clinical Professor in 2012. She published about 230 journal articles and is the grant holder of many major research grants such as the RGC General Research Fund. She is also a key team member to receive a community service fund of US$7M from the HKJC Charity Trust to improve oral health of preschool children.
Biography

Professor Richard Yuxiong Su currently works as a Clinical Professor and Division Chief in Oral and Maxillofacial Surgery, Faculty of Dentistry, The University of Hong Kong. He is the lead surgeon of maxillofacial oncology and microsurgical reconstruction team at the Department of Oral and Maxillofacial Surgery, Queen Mary Hospital, Hong Kong. He is also an Honorary Associate Professor at the Department of Otorhinolaryngology, Chinese University of Hong Kong. Prof Richard Su’s main research areas include clinical and translational research in Oral and Maxillofacial Oncology, microsurgical reconstruction, and salivary gland diseases. He published more than 100 manuscripts in peer-reviewed journals. He lectured extensively in regional and international conferences and courses. Prof Su is the inventor with seven patents, two were registered in the US and five in China. He received seven peer-reviewed external research grants as the principal investigator.
Biography

Prof Bin Shi is deputy director and clinical professor in the Department of Oral and Maxillofacial Surgery, the First Affiliated Hospital of the Fujian Medical University. He received BDS, MDS and PhD from School of Stomatology, Fujian Medical University and School of Dentistry, Medical University of Vienna separately. His clinical work focus on comprehensive treatment of oral and maxillofacial tumors, reconstruction of oral and maxillofacial tissues and organs, orthognathic surgery, oral and maxillofacial trauma rehabilitation and oral implantation. His basic research focus on clinical application of digital imaging technology in Oral and Maxillofacial Surgery, and the correlation between implant surface morphology, osteogenesis and angiogenesis.
Biography

Prof Xiaojing Huang is associate dean and professor (Endodontics and Restorative Dentistry) at the School and Hospital of Stomatology of Fujian Medical University. She started her career in Endodontics and Restorative Dentistry after she obtained BDS, MDS and PhD from West China School of Stomatology, SiChuan University. She worked as a visiting scholar in King’s College London from 2003 to 2004. Her research interests are Microbiology and Cariology. She published over 70 publications and accomplished over 20 research projects, including 3 projects supported by the National Natural Science Foundation of China. She has been awarded Third prize of Science and Technology Progress of Fujian Province. Due to her outstanding achievements, she was awarded as “Young and Middle-Aged Experts” and “Returned Talents after studying abroad” by the Fujian Provincial Health Commission. As a well-recognized expert in her field, Prof Huang is in charge of national course “Endodontics” and involves in editing the national undergraduate teaching material “Endodontics”. She is appointed as the Vice Director of Geriatrics Dentistry Committee and an executive member of Laser Dentistry Committee in Chinese Stomatology Association. In addition, she is the Vice Director of Fujian Stomatology Association as well as the Director of Laser Dentistry Committee of Fujian Stomatology Association.
ABSTRACTS of SATELLITE SECTION II

Section II
E-poster Presentation

BR-1 COMMUNITY SOCIAL DENTISTRY

P-1
Metal and metal oxide nanoparticles in caries prevention: A review

Veena Wenqing Xu*, Mohammed Zahedul Islam Nizami, Iris Xiaoxue Yin, Ollie Yiru Yu, Chun-Hung Chu
The University of Hong Kong, Faculty of Dentistry, Hong Kong SAR, China

Abstract:

Aim: The aim of this study is to provide an overview of the use of metal and metal oxide nanoparticles in caries prevention. The study reviews their effects on dental materials regarding antibacterial, remineralising, aesthetic, and mechanical properties.

Method: A literature search of the original research was conducted on metal and metal oxide nanoparticles for the prevention of dental caries. The definition, mechanism, properties and applications of metal and metal oxide nanoparticles for caries prevention were summarised.

Result: Nanoparticles based on metal and metallic oxide have become a novel trend for dental use as they interfere with bacterial metabolism and prevent biofilm formation. Metal and metal oxide nano-particles demonstrate significant antimicrobial activity by metal ion release, oxidative stress in-duction and non-oxidative mechanisms. Silver, zinc, calcium, titanium, copper, and magnesium have been used to develop metal and metal oxide nanoparticles. The nanoscopic size of the particles increases their surface-to-volume ratio and bioavailability. The increased surface area facilitates their mechanical bond with tooth tissue.

Conclusion: The metal and metal oxide nanoparticles have been incorporated in dental materials to strengthen the mechanical properties of the materials and to prevent caries development.

Acknowledgement: This review is supported by National Natural Science Foundation of China (NSFC)-General Pro-gram 81870812.
P-2
Oral health effects of antipsychotics on psychiatric inpatients in Medan

Fialdy Josua Pattiradjawane*, Sondang Pintaui
University of Sumatera Utara, Faculty of Dentistry, Sumatera, Indonesia

Abstract:

Aim: To analyze the effects of antipsychotic drug use on salivary pH, salivary flow rate, and caries incidence on psychiatric inpatients in a psychiatric facility in Medan, Indonesia.

Method: This was an observational analytical study with a cross-sectional design. The sample population comprised of male and female residents in Pemenang Jiwa Foundation. The population was selected through purposive sampling, which yielded 51 participants. Usage of antipsychotics were categorized based on duration (3-6 months, 5 months-3 years, and >3 years) and the number of daily drug consumption (1,2,3,>3). Oral manifestations evaluated were salivary flow rate, pH, and DMFT. Chi-square and Fisher's exact tests were used to analyze the association between the consumption of antipsychotic agents and salivary pH, salivary flow rate, and caries incidence.

Result: There were 28 females and 23 males with a mean age of 41 years old included in this study. More than half of the respondents (51%) had consumed antipsychotic medications daily for between 6 months-3 years. Fewer than half of the respondents (45%) consumed more than three types of antipsychotic medications daily. There was a significant association between the quantity of antipsychotic agents consumed daily and salivary pH (p=0.007), salivary flow rate (p=0.0001), and caries incidence (p=0.006). Only the duration of antipsychotic drugs used and not the number of antipsychotic drugs consumed daily was associated with salivary pH (p=0.014).

Conclusion: The quantity and duration of antipsychotic agents used affect salivary pH, salivary flow rate, and caries incidence.

P-3
Dental fear status of children in outreach service using SDF

Ivy Guofang Sun*, Hollis Haotian Chai, Edward ChinMan Lo, Chun Hung Chu, Duangporn Duangthip
The University of Hong Kong, Faculty of Dentistry, Hong Kong SAR, China

Abstract:

Aim: The study aimed to evaluate the dental fear and anxiety (DFA) of preschool children after participating in the school-based outreach service using silver diamine fluoride (SDF) to arrest early childhood caries (ECC) and its related factors.

Method: The study recruited 3-to-5-year-old children with untreated ECC with parental consent. A trained dentist performed the examination and applied SDF therapy to the carious lesions. Parental questionnaires were used to collect the child’s demographic information and their dental treatment experience. The child’s DFA before and immediately after SDF therapy was assessed using the self-reported Facial Image Scale (FIS) from 0 to 5 (very happy to very unhappy). The relationship between Children’s DFA after SDF therapy and the potentially related factors such as demographic background, caries experience, and DFA before SDF therapy were analyzed using bivariate analysis.

Result: A total of 352 children (189 boys, 54 %) joined this study. Their mean (SD) age and dmft were 4.8 (0.9) and 4.5 (3.6), respectively. More than three-quarters of children (n=279, 79%) never had a dental visit. After SDF therapy, 86% (303/352) of the children exhibited no or low DFA (FIS≤3), whereas 14% (49/352) reported high DFA (FIS>3). No statistical significance was observed between children’s DFA after SDF therapy and other related factors (p>0.05).

Conclusion: Based on the results of child-report DFA, preschool children with ECC generally exhibited low or no DFA after SDF therapy in a school setting, regardless their demographic background, caries experience and their prior DFA.

Acknowledgement: This project is supported by the General Research Fund No.17100019.
P-4
Knowledge, practices and attitudes towards silver diamine fluoride therapy among dentists in Japan: A mixed methods study

Hollis Haotian Chai1,2; Sakura Kiuchi3, Ken Osaka3, Jun Aida4,5, Chu Chun Hung1, Sherry Shiqian Gao1,2
1 The University of Hong Kong, Faculty of Dentistry, Hong Kong SAR, China
2 Xiamen University, Xiamen, China
3 Tohoku University Graduate School of Dentistry, Sendai, Japan
4 Tokyo Medical and Dental University, Tokyo, Japan

Abstract:

Aim: To determine the relationship between stunting and depth of caries in deciduous teeth using the ICDAS index in elementary school students.

Method: This type of research is an analytic survey with a cross-sectional design. Population is students in 106448 Elementary School Students, Bagan Serdang Village, Pantai Labu Sub-district, Deli Serdang. The sampling technique is done by simple random sampling totaling 79 children. The nutritional status of children is measured by comparing height body against age TB/U using a microtoise staturemeter and depth caries was measured using the ICDAS index. Data analysis was carried out with unpaired t-test.

Result: The highest category of depth of caries is the manifest caries lesion (ICDAS 4-6) 3.90 ± 1.81 for stunting respondents, whereas the mean value for severe stunting respondents is 5.75 ± 1.29. Statistical analysis shows a relationship between stunting and depth of caries in the caries-free category (p=0.043), initial caries lesion (ICDAS 1-3) (p=0.002), and manifest caries lesion (ICDAS 4-6) (p=0.001).

Conclusion: The more severe the stunting child is, the deeper the caries. This study highlights the need to prevent child undernutrition, especially from the first day of pregnancy, the birth of a baby for up to 2 years which is the first 1000 days of human life called the windows opportunity. This is an important part of programs to prevent tooth decay.

P-5
NaCl is able to reduce the erosive dentin wear

Yiying Chen, Xiujiao Lin, Hao Yu
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:

Aim: The present study aimed to investigate the effectiveness of NaCl in reducing erosive dentin wear.

Method: A total of 80 dentin beams (4 x 2 x 2 mm) were prepared and randomly distributed into 5 groups according to the incubation solutions used (n = 16): deionized water (control group), 0.1 M NaCl, 0.3 M NaCl, 0.5 M NaCl, and 1 µ M Odanacatib (cathepsin K inhibitor). Samples were submitted to the 4 daily erosive challenges for 5 days. Each erosion challenge included erosion by immersion in cola drinks for 5 min, incubation in respective solutions for 30 min, and storage in artificial saliva for 2 h. The erosive dentin wear and demineralized organic matrix (DOM) were measured and calculated. Data were analyzed by one-way ANOVA followed by Tukey’s test (p < 0.05).

Result: The application of Odanacatib and NaCl significantly reduced the erosive dentin wear compared with deionized water (p all < 0.05). 0.3 M NaCl achieved significantly lower erosive dentin wear than that of 0.1 M NaCl. 0.3 M and 0.5 M NaCl and Odanacatib preserved significantly thicker DOM compared to 0.1 M NaCl and deionized water (p all < 0.05).

Conclusion: The incubation with 0.3 M and 0.5 M NaCl was shown to reduce the erosive dentin wear and maintain the DOM, possibly through its inhibition on cathepsin K and glycosaminoglycans complex.

Acknowledgement: This study is supported with Science and Technology Planning Project of Fujian Province Grant No. 2019Y9030.
P-6
Application timing of protease inhibitors on dentin erosion

Xiujiao Lin, Yiying Chen, Hao Yu*
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:

Aim: The present study aimed to evaluate the effect of application timing of protease inhibitors on dentin erosion.

Method: Eighty dentin specimens (specimen dimensions: 3 × 2 × 1 mm) were prepared and randomly distributed into 2 groups: prevention (P) and treatment (T) groups. Group P was pretreated with different solutions (deionized water, 1 μM Odanacatib (cathepsin K inhibitor), 1 mM 1,10-Phenanthroline (MMPs inhibitor), and 1 μM Odanacatib + 1 mM 1,10-Phenanthroline, respectively, n=10) for 5 min, and then subjected to erosive attack (rinsed with 150 ml of a cola drink) for 5 min; the cycle was conducted 4 times per day, for 5 days. Conversely, group T was subjected to erosive attack and then treated with different solutions, performed as above-mentioned. Specimens were stored in artificial saliva at 37°C for cycling interval. Substance loss and demineralized organic matrix (DOM) of specimens were measured subsequently. Data were analyzed by Two-way ANOVA and Tukey’s test.

Result: For group P, the protease inhibitors significantly reduced the substance loss and preserved more DOM (P all < 0.05). In terms of group T, the application of protease inhibitors considerably diminished the substance loss; only the use of cathepsin K inhibitor and combination of two inhibitors preserved thicker DOM (P all < 0.05).

Conclusion: The application of protease inhibitors increased the acid resistance of human dentin, regardless of the application timing.

Acknowledgement: This study is supported with Joint Funds for the Innovation of Science and Technology, Fujian Province (Grant No. 2019Y9030).

P-7
A study of tooth wear and chronic unpredictable mild stress

Yuxuan Lin, Jiang Chen, Sihui Zhang*
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:

Aim: To explore the effect of chronic unpredictable mild stress (CUMS) on the degree of tooth wear in mice, and to provide a theoretical basis for the prevention and treatment of clinical tooth wear.

Method: C57BL/6 mice were randomly divided into 2 groups: control group (n=8) and CUMS group (n=8). A mouse model of depression was established by applying CUMS for 8 weeks, and two stresses were randomly applied every day. At week 0, week 4 and week 8, the stress levels in mice were evaluated by body weight measurement, sucrose preference test(SPT), open field test(OFT) and elevated plus-maze test(EPM). After the experiment, the skull and jaw specimens of the mice were scanned with a high precision desktop scanner(inEos X5, Dentsply Sirona), and the wear degree of the right maxillary first molars of the two groups of mice was observed.

Result: Compared with the control group, the degree of molar wear in mice in the CUMS group was significantly increased (P<0.05).

Conclusion: This study showed that chronic unpredictable mild stress significantly increases the degree of molar wear in mice, so stress may be a facilitator of tooth wear in clinical patients.
P-8
WNT pathway promotes chemoresistance of OSCC via regulating transport

Kairui Sun, Youguang Lu, Dali Zheng*
Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:

Aim: To investigate the effect of activation of WNT signaling pathway on chemoresistance in OSCC (oral squamous cell carcinoma) and identify underlying molecular basis.

Method: Low-dose intermittent induction method was used to establish 5-Fu and Oxaliplatin-resistant cell lines. The difference of gene expression between parental and resistant cell lines was analyzed by RNA sequencing and verified by RT-qPCR and western blot. siRNA was used to knock down the expression level of the target gene, and CCK8 was used to measure the change of IC50. The expression of ABCs and SLCs was detected by RT-qPCR and western blot and IC50 was detected by CCK8 after WNT signaling pathway was activated. The binding sites of LEF1/TCF7 near the promoter of ABCs and SLCs genes were predicted using public databases. Chromatin immunoprecipitation (CHIP) assay was used to identify the change of binding ability.

Result: IC50 of the drug-resistant cells was significantly higher than that of the parental cells. Knocking down the expression of the target gene in drug-resistant strains reduced cell resistance. After activation of WNT signaling pathway, the expression of ABCs increased and SLCs decreased and drug resistance increased. LEF1/TCF7 were proved to bind to the promoter of ABCs and SLCs.

Conclusion: WNT signaling pathway promotes chemoresistance of oral squamous cell carcinoma via regulating the expression of ABC transporters and SLC transporters.

P-9
MDM4 regulates metabolic reprogramming in TP53-mutated oral squamous carcinoma cells

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Abstract:

Aim: This study is intended to investigate the effect of MDM4 expression level on the proliferation, metastasis of TP53-mutated oral squamous carcinoma (OSCC), and whether it depends on the metabolic reprogramming.

Method: Construction of cells with different MDM4 expression levels in TP53-mutated cell lines (HN6 and CAL27) using lentiviral knockdown and overexpression vectors. The proliferation and mobility of cancer cells were examined by CCK8 reagent, wound healing assay and invasion chamber. Metabolomic analysis was performed on MDM4 overexpressing cells and possible metabolic differences were verified by examining glucose uptake, lactate, ATP and ROS production.

Result: Overexpression of MDM4 promoted the proliferation and migration of HN6 and CAL27 cells, and knockdown of MDM4 obtained the opposite result. Overexpression of MDM4 reorganized the metabolism of cancer cells, making them more dependent on anaerobic respiration even in an aerobic environment, with increased cellular glucose uptake, lactate and ATP production, and decreased ROS production.

Conclusion: In the setting of TP53 mutation, MDM4 can regulate the proliferation and migration of OSCC cells, and this regulatory ability may be dependent on metabolic reprogramming.
ABSTRACTS of SATELLITE SECTION II

Section II
E-poster Presentation

BR-2 REHABILITATION DENTISTRY

P-1
Common medical and dental problems in older adults

Alice Kit Ying Chan, Katherine Chiu Man Leung, Chun Hung Chu
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Abstract:

Aim: The advancement of medicine has reduced the rate of mortality and hence the older adult population is increasing. Among the 7.7 billion world population in 2019, 1 in 11 people were at the age of 65 or more. The older adult population is expected to increase to 1 in 6 people by 2050. The degenerative changes in older adults become more severe with age and affect their medical condition. These degenerative changes together with chronic medical conditions and associated polypharmacy make them more vulnerable to oral diseases. The aim of this study is to give an overview of the common medical and dental problems and their impacts in older adults.

Method: This study used the World Health Organization’s websites to review current global oral and systemic health issues and PubMed and Google Scholar databases to identify literatures on common medical and dental problems in older adults with no time restriction.

Result: Studies generally reported that dental caries particularly root caries and periodontal disease are highly prevalent among older adults. In addition, edentulism, xerostomia, tooth wear, and head and neck cancer are also common in older adults. These oral diseases are often interrelated with their systemic problems. A meta-analysis reported diabetes increases the incidence and progression of periodontitis by 86%. A decrease in salivary output is common among older adults having polypharmacy. A review reported older adults with low stimulated salivary flow rate have 60% increased caries risk. Hypertension, rheumatoid arthritis, dementia, and depression complicate the delivery of dental treatment in older adults.

Conclusion: With the increasing need of elderly dental care, dentists and other dental personnel should understand the interrelationship between oral and general health in order to provide a successful dental care plan for older adults.
P-2
Graphene oxide-laden injectable hydrogel for craniofacial tissue regeneration

Sangjin Lee*
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Abstract:

Aim: Graphene oxide (GO) incorporated hydrogels have received great attention and have shown excellent potential for use in the field of bone tissue engineering due to their unique osteogenic functionalities. However, current hydrogel systems are limited in their ability to provide an appropriate amount of GO to the lesion area. To overcome this issue, we designed a GO incorporated glycol chitosan (gC)-hyaluronic acid (HA) injectable hydrogel system via a simple oxidation technique. The major aims of this study were to define: i) the manufacturing of an injectable gC/oHA hydrogel platform under mild aqueous conditions without using toxic solvents, chemicals, and ultraviolet irradiation, ii) the improvement of the osteogenic cellular activity via incorporation of GO, and iii) demonstration the applicability of the osteoinductive material to bone tissue regeneration.

Method: The oHA synthesized by oxidation process. After that, it conjugated with gC by mixing simply. To enhance the osteogenic activity, pre-made hydrogel solution directly mixed with GO before conjugation. The manufactured products were evaluated by physico-chemical characterization followed by in vitro assessment. Finally, in vivo analysis was carried out in a rat calvarial defect model.

Result: Through a mild oxidation technique, we successfully synthesized oHA. This was used to generate a biocompatible gC/oHA hydrogel without using any chemical and radiological cross-linking. The gC/oHA injectable hydrogel could easily modulate the GO content and had robust mechanical properties with improved stability. We investigated the cellular behaviour regarding both cell viability and osteogenic differentiation. Interestingly, GO incorporated injectable hydrogel exhibited very little toxicity, but showed excellent osteogenic activity. This was confirmed by both in vitro and in vivo assessments.

Conclusion: As demonstrated by these results, the developed hydrogel system has good bone tissue regeneration potential and can be widely applicable for use in bone tissue therapy.

P-3
A new method for making the implant guide

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Abstract:

Aim: This study introduces a simple method for the fabrication of dental implant guide, aiming to improve the efficiency of implant guide fabrication.

Method: The preoperative intraoral scan data combined with CBCT was used to design the implant placement direction and position, set the implantation position as the origin and the implantation direction as the Y axis, established a three-dimensional coordinate system, and take the three-dimensional coordinate positions of the two marked points on the model, used the modified dental cast surveyor and take the marker rod as the Y axis, the tilt angle of the platform was determined by the position of the marked points, the design of implant guide in the computer software was transferred to the model to make the implant guide, and then evaluated the accuracy and production time of the implant guide.

Result: This implant guide making technology has high accuracy, and does not require a 3D printer, the guide can be obtained in less than 10 minutes.

Conclusion: This method transfers the design of implant guide in the software to the solid model, which has the advantages of rapidity and accuracy.
P-4
Influence of intraoral conditions on the accuracy of implant impressions

Yongqing Guo, Yun Ma, Hao Yu*
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Abstract:

Aim: To explore the effects of intraoral conditions on the trueness and precision of implant impression techniques for partially edentulous arches.

Method: Four volunteers participated in this study. Four implant site simulators (ISS) made from ethylene vinyl acetate (EVA) sheets and resin blocks were fabricated for each volunteer. Each ISS contains two parallel implant analogs respectively and locations were as follows: maxillary posterior region (MaxP), maxillary anterior region (MaxA), mandibular posterior region (ManP), and mandibular anterior region (ManA). Five impressions were taken by open-tray technique (OTT) and intraoral scanning technique (IST) for each ISS respectively under laboratory conditions. Then the ISSs were positioned into volunteers' mouths and the same impression procedures were conducted intraorally. Linear distance and angulation between two analogs were measured in Creo Parametric 8 and calculated for trueness and precision.

Result: For IST, the trueness under intraoral conditions appeared significantly lower in MaxP and ManP than those under laboratory conditions (P < 0.001, =0.009). For OTT, except in MaxA, trueness under intraoral conditions was significantly higher than those under laboratory conditions in another three regions (P for all < 0.05). The effects of intraoral conditions on the precision of both IST and OTT were not significant (P for all >0.05).

Conclusion: Intraoral conditions affect the trueness of both IST and OTT in partly intraoral regions and have no effect on the precision of both IST and OTT. Results of the maxillary anterior area from in vitro accuracy studies regarding two techniques might have higher clinical value.

P-5
Molecular mechanism of WNT7A in oral squamous cell carcinoma

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1 Fujian Medical University School of Stomatology, Fuzhou, China  
2 The First Affiliated Hospital of Fujian Medical University, Fuzhou, China  
3 Fujian Medical University School of Basic Medical Sciences, Fuzhou, China

Abstract:

Aim: We explored the possibility of WNT7A as indicators for clinical diagnosis and prognosis of OSCC (Oral squamous cell carcinoma). The functions and mechanisms of WNT7A in OSCC were discussed.

Method: Quantitative PCR and immunohistochemistry to detect the expression level of Wnt ligand in tissues. ELISA to detect the level of Wnt ligands in serum samples. Analyze the role of WNT7A on the functions of OSCC cells and the activation of the signaling pathway by western bolt and immunoprecipitation.

Result: WNT7A was elevated in OSCC tissues and patient serum. WNT7A in OSCC patients' serum samples were declined to normal after surgery in one month. WNT7A can promote proliferation and cell stemness in vitro. WNT7A can promote the phosphorylation of STAT3 combined with FZD5/FZD7.

Conclusion: Our results prove that WNT7A may serve as indicators for the clinical diagnosis and prognosis of OSCC. Suppression of the WNT7A and STAT3 maybe is a novel therapeutic strategy for targeted therapy of OSCC.
Identification and validation of autophagy-related genes in hBMSCs’ osteogenic differentiation

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Abstract:
Aim: To explore the function of autophagy-related genes involved in osteogenic differentiation of bone marrow mesenchymal stem cells.
Method: The mRNA expression profile of hBMSCs during osteogenic differentiation (GSE178679) was downloaded from the GEO database. The differentially expressed autophagy-related genes (ARGs) and their correlation were obtained and analyzed using R software. The Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG) enrichment analyses were performed to predict the potential functions of differentially expressed ARGs. The PPI network and hub genes mining were constructed to visualize the interaction between differentially expressed ARGs using STRING database and Cytoscape software. Finally, the qRT-PCR was conducted to validate the expression level of ARGs in hBMSCs between the osteogenic induction group and the control group.
Result: 37 differentially expressed ARGs were finally obtained, including 12 up-regulated and 25 down-regulated genes. GO and KEGG enrichment analysis showed that most of these genes were enriched in Apoptosis and Autophagy. The PPI network revealed strong interactions between differentially expressed ARGs. The expression level of differentially expressed ARGs tested by qRT-PCR showed FOXO1, MAP1LC3C, CTSB, FOXO3, CALCOCO2, FKBP1A, MAPK8IP1, NRG1, VEGFA and ITGA6 were consistent with the expression of sequencing data.
Conclusion: We identified 37 ARGs during osteogenic differentiation using bioinformatics analysis. FOXO1, MAP1LC3C, CTSB, FOXO3, CALCOCO2, FKBP1A, MAPK8IP1, NRG1, VEGFA and ITGA6 may regulate osteogenic differentiation of hBMSCs by involving autophagy pathway. This study provides new insight into osteogenic differentiation of hBMSCs and may be available in developing therapeutic strategies for maxillofacial bone defects.
Acknowledgement: This work was supported by the Natural Science Foundation of Fujian Province (Grant number: 2021J01792).
Detection of retention loss of fixed partial dentures using resonance frequency analysis and machine learning: An in vitro study

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2Tohoku University Graduate School of Engineering, Sendai, Japan

Abstract:

Aim: This study aimed to determine the usefulness of machine learning applications: supervised learning and unsupervised learning for detecting the connecting condition between fixed dental prostheses (FPD) and its abutment, using a resonance frequency analysis system. This was crucial, especially when one of the retainers had failed of the retention.

Method: The vitro model had a three-unit FPD made of a high gold alloy that bridged the second premolar and second molar on the mandible (the retainers are both full coverage crowns). Four connecting conditions between the FPD and the abutments were set: i) both crowns firmly cemented; ii) only the premolar crown cemented; iii) only the molar crown cemented; and iv) both crowns uncemented. For resonance frequency analysis of the connecting conditions, impulsive vibration (4 Hz) and 16 impulsive forces were directly applied to the buccal side of the tested tooth (Periotest®). Frequency responses were measured using a 3D acceleration sensor mounted on the occlusal surface of the tested tooth (the second molar or second premolar). Thus, 8 testing sites (4 connecting conditions × 2 measuring sites) were evaluated. On the datasets, two machine learning techniques (supervised learning and unsupervised learning) were used. To examine the variation characteristic for the cementation conditions, feature importance graphs and anomaly scores were obtained.

Result: According to the feature importance graphs from supervised learning application, the full cementation condition had its highest scores around 3000 Hz, the partial cementation condition had its highest scores around 1000 Hz, while the highest scores of uncementation condition were between 0-500 Hz. Furthermore, using the unsupervised learning method, the fully cemented condition had the lowest anomaly score, while the uncemented conditions and partially cemented conditions had higher anomaly scores.

Conclusion: These findings indicated that recently established machine learning algorithms have high potential for utilizing resonance frequency analysis to detect the cementation conditions of FPD, hence facilitating the early diagnosis of retention loss of FPD.
ABSTRACTS of SATELLITE SECTION II

Section II
E-poster Presentation

BR-3 ECOLOGICAL DENTISTRY / DENTAL DISEASE MANAGEMENT / INNOVATIVE DENTISTRY

P-1
High-resolution taxonomic and functional profiling of microbiota in low-biomass samples

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Abstract:

Aim: The human microbiome has emerged as one of the highest-impact areas of science, with a very high translational impact on cures for otherwise fundamentally non-communicable diseases. Method: Recently, specific human microbiota was identified in clinical samples with low microbial biomass, high host contamination, or severe DNA degradation (i.e., blood, tumor tissue, skin, FFPE, etc.), suggesting novel disease diagnosis and prediction opportunities. High-resolution identification of microbiota and functional profiling is critically important yet remains challenging for conventional approaches such as amplicon-based or whole-metagenome sequencing. To address the notable challenges, 2bRAD-M was developed as a highly reduced and cost-effective strategy that only sequences ~ 1% of metagenome. It can simultaneously produce species/strain-level bacterial, archaeal, and fungal profiles. Result: Notably, we demonstrated that it can accurately generate taxonomic profiles for otherwise hard-to-sequence samples with merely 1 pg of total DNA, high host DNA contamination, or severely fragmented DNA from degraded samples. Tests of 2bRAD-M on the stool, saliva, skin, environmental, and clinical FFPE samples suggest a successful reconstruction of comprehensive, high-resolution microbial profiles implicating many clinical applications. Conclusion: It largely expanded our capability of exploring the microbial world in the underexplored sites that are widely associated with a range of non-communicable diseases.
P-2  
**Impact of chronic apical periodontitis on systemic diseases of rats**

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**Abstract:**

**Aim:** To evaluate the impact of the chronic apical periodontitis (CAP) induced by *Porphyromonas gingivalis* (Pg) on the aorta and liver of obese and non-obese rats.

**Method:** Twenty-four Sprague Dawley rats were fed either high fat diet (HFD) or normal diet (ND) for 9 weeks. After that, these groups were divided into two subgroups: Control group and Pg-CAP group. CAP model was induced by Pg. At 12th week, the jaw was harvested and then scanned by micro-CT. Serum lipids and cytokines were detected. The mRNA expression of inflammatory factors of aorta were measured by PCR. The aorta and liver were dissected for histological evaluation.

**Result:** Serum total cholesterol in HFD + CAP group was significantly higher while high-density lipoprotein cholesterol was lower than those in other groups (P<0.05). Inflammatory cells were found in muscularis and adventitia of CAP group in rats, while the liver steatosis was only found in obese rats, and the CAP group was more severe than HFD group. Levels of TNF-α, IL-6, MCP-1, IL-1α and IL-13 increased in the CAP rats compared with the control rats. mRNA expression levels of TNF-α, MCP-1 were markedly elevated in rats in the HFD+CAP group compared with those in any other groups.

**Conclusion:** CAP mediated the high expression of cytokines and induced the initial inflammatory response in the aorta. CAP can increase the liver steatosis in obese rats. Hyperlipidemia facilitated the expression of inflammatory factors and contributed to the development of liver disease.

**Acknowledgement:** This study is supported with NSFC Grant No. 81500845.

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P-3  
**Efficacy of different tooth-bleaching regimens: A randomized controlled clinical trial**

**Bingjie Zhong, Yiling Cheng, Hao Yu**
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**Abstract:**

**Aim:** The aim of this study was to compare the clinical efficacy of the at-home, in-office, and combined bleaching regimens.

**Method:** A double-blind randomized controlled clinical trial was performed according to Consolidated Standards of Reporting Trials (CONSORT) (registration no. NCT05021965). Forty-eight participants were recruited and randomly divided into 4 groups (n=12): 1) at-home bleaching using 10% carbamide peroxide for 14 days (HB); 2) in-office bleaching using 40% hydrogen peroxide 2 consecutive 20-minutes for two sessions, with 1-week interval (OB); 3) a session of in-office bleaching followed by at-home bleaching for 7 days (OHB); and 4) at-home bleaching for 7 days followed by a session of in-office bleaching (HOB). The tooth color was measured at baseline (T0), after the first (T1) and second (T2) session of bleaching, and 4 weeks after the end of bleaching (T3). Color differences (ΔE) were then calculated. Tooth sensitivity was recorded using a visual analog scale (VAS) for 16 consecutive days. Data were analyzed by One-way ANOVA and Wilcoxon signed-rank test.

**Result:** The group HOB had significantly greater ΔE values in the second session than that in the group HB, while group OHB exhibited significantly greater ΔE values after the second session than that in the group HB (P<0.05). Significantly lower VAS values were observed in the group HB when compared with the groups OB and HOB (P<0.05).

**Conclusion:** Combined bleaching regimen resulted in the most pronounced whitening effect. However, the tooth sensitivity after the combined bleaching regimen is similar to other regimens tested.
P-4
Tofacitinib alleviates experimental primary sjögren’s syndrome

Yanjun Lin, Dong Wu, Jiang Chen
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Abstract:

Aim: We will provide a reference of small molecule drug targeted therapy by constructing an animal treatment model of primary Sjögren’s syndrome (pSS) and evaluating the efficacy of tofacitinib for pSS.

Method: We selected NOD/ShiLtj mice as the subjects of tofacitinib treatment. Body weight, daily water intake, and fasting blood sugar were monitored. Saliva secretion, tear secretion, corneal fluorescence staining, tear film break-up time, and organ index were detected. HE staining was used to observe the pathological changes of the submandibular glands, corneas, and lacrimal glands. AB-PAS staining, Masson’s trichrome staining, and Sirius red staining were used to observe the pathological changes of the submandibular glands. ELISA was used to detect the anti-SSA and anti-SSB antibody levels in plasma.

Result: Tofacitinib can appropriately increase body weight, reduce daily water intake, and have no therapeutic effect on diabetes. Tofacitinib can improve salivary and tear secretion, decrease corneal fluorescein staining score, and prolong tear break-up time. Tofacitinib can reduce tissue swelling in the salivary glands, lungs, and spleen. Tofacitinib can relieve lymphocyte infiltration in salivary glands and lacrimal glands, increase the amount of protein secreted by salivary glands, relieve the surrounding infiltration foci and change the degree of fibrosis and collagen type. Tofacitinib can improve collagenous fiber arrangement in the corneal stroma. Tofacitinib can reduce anti-SSA and anti-SSB antibody levels in plasma.

Conclusion: The results of tofacitinib-treated pSS mice indicate that tofacitinib can improve the exocrine function, reduce the lymphocyte infiltration of exocrine glands, improve local inflammation level, and reduce autoantibody levels.

P-5
II-Y-Shaped Vascular Anastomosis for Reconstruction in Vessel-Depleted Neck

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2 Tohoku University Graduate School of Dentistry, Sendai, Japan

Abstract:

Aim: To introduce a novel anastomosis technique for salvage free flap transfer for head and neck reconstruction in a vessel-depleted neck, which is challenging because the difficulty of selecting the recipient vessel and the discrepancy of vessel diameters.

Method: The authors describe a novel technique for vascular anastomosis, which allows 2 thin donor veins end-to-end anastomosed with the larger recipient vein. This II-Y – shaped vascular anastomosis for free flap reconstruction was performed at the Department of Head and Neck Surgery, Oral and Maxillofacial Oncology, West China Stomatology Hospital, Sichuan University.

Result: The patient received anterolateral thigh flap transfer after tumor excision. The ligated stump of the external jugular vein was anastomosed to the enlarged accompanying veins of the anterolateral thigh flap. The flap survived completely without complications. The II-Y – shaped vascular anastomosis procedures were easy to perform and no complications were observed.

Conclusion: This novel technique could be useful in free flap transfer in vessel-depleted neck as an efficient way of adjusting the limited diameters.
P-6
Fatty infiltration of lateral pterygoid muscle with anterior disk displacement

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²Fujian Medical University School of Radiology, China

Abstract:
Aim: To evaluate the fat fraction, morphological features and texture features of lateral pterygoid muscle (LPM) in patients with anterior disk displacement (ADD) using T1-weighted Dixon sequence.
Method: This retrospective study included patients who underwent temporomandibular joint (TMJ) MRI with T1-weighted Dixon sequence between December 2018 and August 2020. The TMJs were divided into three groups according to the position of disk: Normal position disk (NP) group, Anterior disk displacement with reduction (ADDWR) group and Anterior disk displacement without reduction (ADDWOR) group. Fat fraction, morphological features and texture features of LPM were evaluated. One-way ANOVA, Welch's ANOVA, Kruskal-Wallis test, Intra-class correlation coefficient, Spearman and Pearson correlation analysis were performed.
Result: A total of 53 patients with 106 TMJs were evaluated. ADDWOR group showed higher fat fraction than NP group (P=0.024). Length of LPM was negatively correlated with fat fraction (r=-0.22, P=0.026). Angular second moment (ρ=-0.32, P < 0.001), correlation (ρ = -0.28, P = 0.003) and inverse different moment (ρ =-0.27, P=0.005) were negatively correlated with fat fraction, while positive correlation was found between entropy and fat fraction (ρ = 0.31, P = 0.001). The intra-class correlation coefficients for all values were ranged from 0.80 to 0.97.
Conclusion: Patients with ADDWOR present more fatty infiltration in the LPM compared to patients with NP. Fatty infiltration of LPM was associated with more atrophic and higher intramuscular heterogeneity in patients with ADD. Fat fraction of LPM noninvasively evaluated by Dixon sequence may has utility as an imaging-based marker of the structural severity of ADD disease process.
Acknowledgement: This work was supported by the Funding Project of Medical Innovation of Fujian Province (No. 2019-CX-23), the joint Project of Health and Education of Fujian Province (No. 2019-WJ-10), the Leading Project of the Department of Science and Technology of Fujian Province (No. 2020Y0025) and the National Natural Science Foundation of China (No. 82071869).
P-7
Cell behavior of MC3T3-E1 and Saos-2 cultured on TiO2 nanotubes

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Abstract:

Aim: Nanostructure materials were considered a fundamental research direction in dental implant and orthopedic research because bone itself has a structural hierarchy at the first level in the nanometer regime. However, some studies reported different or opposite cell behaviors on the same nanostructure. In this study, we focus on the cell behaviors of two species of osteoblast-like cells (MC3T3-E1 and Saos-2) on titanium oxide (TiO2) surface nanostructures with different tube diameters.

Method: The mirror-polished commercial pure titanium (CpTi) foils, 12mm x 12mm in square shape and 0.1mm in thickness, are used in this study. Nanotubular structures were fabricated on the surface of titanium foil by anodic oxidation at different voltages. All specimens were finally treated by high-temperature annealing. Surface wettability testing and scanning electron microscopy were used to evaluate the morphology of the nanotube structure. Then, seeding cells onto the specimen surface and observing the cell morphology after 12h and 24h culture. The cell proliferation was investigated by cell counting kit-8 (CCK-8) assay after 1, 4, and 7 days of culture. On Day 14, Alkaline Phosphatase (ALP) Assay was used to investigate cell differentiation.

Result: All specimens showed an obviously tubular structure and extended in tube diameter with increasing voltage. The cell morphology of MC3T3-E1 has longer filopodia stretching than Saos-2. But Saos-2 on nanotube structures formed under 55V-60V showed a significant increase in cell differentiation, which cannot be seen in MC3T3-E1.

Conclusion: This study suggests that there are significant differences in the differentiation behavior of Saos-2 and MC3T3-E1 on nanotube surfaces.

P-8
Growth promotion factors of ECC-associated bacterium, Scardovia wiggsiae

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Abstract:

Aim: S. wiggsiae is known to be detected in early childhood caries (ECC) in the absence of S. mutans, strongly suggesting its association with ECC. S. wiggsiae has stricter nutritional requirements than other caries-associated bacteria. Since Haemophilus influenzae is known to require NAD (factor V) and hemin (factor X) for growth, this study examined the effect of nicotinamide (NAM) and nicotinic acid (NA), the precursors of NAD, and hemin on the promotion of S. wiggsiae growth.

Method: S. wiggsiae C1A55 strain was grown anaerobically on a blood agar medium at 37° C for 5 days. The obtained colonies were suspended in TYG broth and anaerobically incubated with serial dilutions of NAM, NA, NAD, and hemin; after 96 hours, absorbance and pH were measured, and the concentration of acidic end products was analyzed.

Result: NAM, NAD, and hemin promoted bacterial growth, while NA did not. During growth promotion by these components, bacterial acid production was also conducted, resulting in a final pH below 5. The combined growth of hemin and NAD exceeded that of hemin or NAD alone. Acetate accounted for about 70% of the acidic end-products, with no significant differences among all growth conditions.

Conclusion: The present study revealed that S. wiggsiae possesses nutritional requirements for NAD (factor V) and NAD (factor X) similar to H. influenzae. NA did not enhance the growth of S. wiggsiae, suggesting that the biosynthetic pathway of NAD, unlike H. influenzae, is catalyzed by one-step enzymatic reaction from NAM to NAD.

Acknowledgement: This study is supported by Grant-in-Aid for Scientific Research (B) No. 21H03151, Grant-in-Aid for Scientific Research (C) No. 18K09905, JSPS, Japan.
S2-1
Use of silver nanoparticles in caries prevention

Dr. Iris Xiaoxue YIN
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Abstract:
Silver nanoparticles are wildly used as antimicrobial agents in dentistry. Their efficacy is not only due to their nanoscale size, but also to their large ratio of surface area to volume. Silver nanoparticles effectively inhibit cariogenic bacteria mainly Streptococcus mutans for caries management. They can be used as a topical antibacterial agent on enamel or dentin to prevent caries formation. The incorporation of silver nanoparticles into composite resin or glass ionomer cement can prevent secondary caries formation. Combined use of silver nanoparticles with diode laser irradiation (650 nm) or fluoride can remineralising carious lesion for caries prevention. Therefore, silver nanoparticles can be applied to teeth to prevent caries development. Silver nanoparticles has anti-bactericidal properties which can be incorporated into dental materials for prevention of secondary caries. Moreover, silver nanoparticles may be used to remineralise carious lesion and arrest caries. Although not all authorities have acknowledged the safety of silver nanoparticles, no systemic toxicity of ingested silver nanoparticles has been reported. This lecture provides an overview of application of silver nanoparticles in caries prevention, highlighting its antibacterial mechanism, potential applications and safety in clinical treatment.

Biography:
Dr Iris Xiaoxue Yin is a clinical practitioner in the Faculty of Dentistry, The University of Hong Kong. She was conferred Bachelor of Medicine Stomatolgy from the Anhui Medical University and Doctor of Philosophy from The University of Hong Kong. Her research includes use of fluoride in caries management, dental lasers and in particular use of silver nanoparticles in dentistry. Dr. Yin has published 20 international peer review journal articles in reputable journal such as Dental Materials and Journal of Dentistry. She received a handful of research and knowledge transfer awards including IADR Kulzer Travel Award in 2020 and Outstanding performance & commitment to community service award in 2021. She is review editor of specialty section of Frontiers in Oral Health.
S2-2
Use of antimicrobial peptide for dentistry

Dr. John Yun NIU
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Abstract:
During the past two decades, the use of antimicrobial peptides for dentistry has drawn considerable attention from researchers. Antimicrobial peptides are the first host defence line in response to microbial infection. In addition, they are involved in the innate immune response. Antimicrobial peptides kill microorganisms through direct binding with negatively charged microbial surfaces. Natural antimicrobial peptides play an essential role in oral health. Synthetic antimicrobial peptides are a potential alternative to traditional antimicrobial therapy. Pertinent to oral diseases, the deregulation of antimicrobial peptides is involved in the pathogenesis of dental caries, periodontal disease, mucosal disease, and oral cancer, where they can kill pathogenic microorganisms, promote tissue healing, serve as biomarkers and inhibit tumour cells.

Biography:
Dr John Yun NIU is a research staff of the University of Hong Kong. He obtained his BDS and MDS from Wuhan University and PhD from Hong Kong University. He is a youth committee of the Temporomandibular Joint Diseases and Occlusion Scientific Committee of the Chinese Stomatological Association (CSA). He is a member of the International Association for Dental Research (IADR), the Chinese Stomatological Association (CSA), the Academy of Dental Materials (ADM), the World Federation of Laser in Dentistry (WFLD) and the Academy of Laser Dentistry (ALD). He is an Affiliate of the Royal Australasian College of Dental Surgeons (RACDS). Dr Niu was a clinical tutor at Shanxi Provincial People's Hospital, China.
S2-3
Reducing expression of SFRP3 and SFRP4 in TMJOA model

Dr. Senxin CAI
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Abstract:
Mechanical stress overload in the temporomandibular joint (TMJ) is an important cause of TMJ osteoarthritis (TMJOA). Whether secreted frizzled-related protein (SFRP) 3 and SFRP4 play important roles in the development of mechanical stress-induced TMJOA remains controversial. In this study, we investigated the progression of mechanical stress-induced TMJOA using an in vivo model via modified increased occlusal vertical dimension (iOVD) malocclusion and an in vitro model in which isolated chondrocytes were subjected to mechanical stress. Our work suggests that mechanical stress reduces SFRP3 and SFRP4 expression both in vivo and in vitro and promotes TMJOA via Wnt/β-catenin signaling. Suppression of Wnt/β-catenin signaling promotes SFRP expression, especially SFRP3 and SFRP4 expression, and rescues mechanical stress-induced cartilage degeneration. Wnt/β-catenin signaling and SFRPs may represent potential therapeutic targets for TMJOA.

Biography:
Dr Senxin Cai is a resident orthodontist and working at the School and Hospital of Stomatology of Fujian Medical University. He is a member of the Oral Biomedical Professional Committee of the Chinese Stomatological Association and secretary of the Oral Biomedical Professional Committee of the Fujian Stomatological Association. Dr. Cai's research interests include basic and clinical research in orthodontics and temporomandibular joint diseases, and he published about 5 articles in various journals.
S2-4
Development of osteoblast-scaffold construct for bone regeneration therapy

Dr. Venkata VENKATAIAH
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Abstract:
This study aims to develop a new bone tissue engineering technology by combining mouse calvaria osteoblasts (MCOB) with 3-dimensional polylactic acid (3DPL) scaffold for large bone defects. Murine alveolar bone defect model is prepared by extraction of upper first molar and allowed to heal for four weeks. MCOB are isolated from mouse calvaria and seeded onto sterilized 3DPL scaffold to prepare MCOB-3DPL construct before transplantation. On the day of implantation, alveolar bone defect is prepared in the extraction site, filled with MCOB-3DPL construct, and left for 4 and 8 weeks. Commercial bone graft material (cytrans), 3DPL scaffold without cells and empty defect were used as control groups. Following implantation, the bone regeneration ability in the defect site is investigated by histological and micro-CT analysis. In addition, biomechanical properties of the regenerated bone tissue was investigated by nanoindentation tests and implant therapy. The Micro CT and histological analysis have confirmed that implanted MCOB-3DPL constructs have successfully regenerated bone within the mouse alveolar bone defects. Nanoindentation analysis has shown that MCOB-3DPL construct regenerated bone has similar micromechanical strength to the native bone. In addition, histological analysis following implant therapy revealed that regenerated bone possesses osseointegration ability, wherein a direct structural connection is established with the titanium implant surface. Tissue constructs formed by a 3DPL scaffold and immature osteoblast-like cells such as MCOBs represent a novel bone tissue engineering approach that enables the formation of vertical bone with the micromechanical properties suitable for regeneration of large bone defects.

Biography:
Dr. Venkata Venkataiah is a recent PhD graduate from Tohoku University working on Tissue Engineering in Dentistry. In 2009, I graduated with a Bachelor of Dental Surgery (B.D.S.) in 2009 from K.G.F. College of Dental Sciences, India, and Master's in Dental Surgery (M.D.S.) in 2014 from Vokkaligara Sangha Dental College and Hospital, India. Then worked as a Senior lecturer at the K.L.E. Institute of Dental Sciences, India, focusing mainly on instructing and mentoring undergraduate students on operative dentistry and Endodontics. Presently, working as an assistant professor with a primary research focus on Bone tissue engineering. I aim to develop a tissue-engineered construct suitable for clinical applications. I am currently working to find out the best combination of cells and scaffolds with robust bone regeneration properties. In this regard, I am isolating osteogenic cells from bone biopsies and investigating their bone formation ability in in-vitro and in vivo studies. Our research findings show that these bone-derived cells possess a more remarkable osteogenic ability, enhancing bone regeneration. Currently, we utilize these osteogenic cells and combine them with various bio-scaffolds to identify the suitable cell-scaffold construct for further enhancing bone regeneration in small and large animal bone defect models. Apart from primary research, I am actively involved with co-researchers in their research work, which mainly focuses on molecular and cellular research activities related to endodontics, such as investigating target therapeutic molecules to treat apical periodontitis.
S2-5
Nanosilicate-functionalized PCL orchestrates bone regeneration

Dr. Xiongcheng XU
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Abstract:
Massive oral and maxillofacial bone defect regeneration remains a major clinical challenge due to the absence of functionalized bone grafts with ideal mechanical and pro-regeneration properties. Laponite (LAP) was incorporated into polycaprolactone (PCL) to develop a biomaterial for bone regeneration. A series LAP-embedded PCL composites were synthesized. Then we explored whether LAP-embedded PCL would accelerate bone regeneration by orchestrating osteoblasts to directly and indirectly induce bone regeneration processes in vitro and in vivo. The results confirmed the presence of LAP in PCL, and LAP was distributed in the exfoliated structure without aggregates. Incorporation of LAP in PCL slightly improved the compressive properties. LAP-embedded PCL is biocompatible and exerts pronounced enhancements in cell viability, osteogenic differentiation and extracellular matrix formation of osteoblasts. Furthermore, osteoblasts cultured on LAP-embedded PCL facilitated angiogenesis of vessel endothelial cells and alleviated osteoclastogenesis of osteoclasts in a paracrine manner. The addition of LAP to the PCL endowed favorable bone formation in vivo. LAP-embedded PCL shows great potential as an ideal bone graft that exerts both space-maintaining and vascularized bone regeneration synergistic effects and can be envisioned for oral and maxillofacial bone defect regeneration.

Biography:
Dr Xiongcheng Xu currently works at School and Hospital of Stomatology, Fujian Medical University. He received his DDS and PhD from Fujian Medical University, China. Dr. Xu is the recipient of Excellent Postgraduate Dissertation Awards of Fujian Province in 2018. He has published 6 peer-reviewed scientific articles. Dr. Xu’s research focuses on periodontology in attempts to regenerate various periodontal defects.
S2-6
Elucidating the mechanisms between oral and systemic health

Dr. Taro KUSAMA
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Abstract:
The present study aimed to investigate the mediating effect of weight loss in the relationship between tooth loss and increased mortality risk. This was a 10-year follow-up prospective cohort study targeting independent older adults aged 65 years or older at baseline and were followed up from 2010 to 2020. The incidence of death between 2013 and 2020, incidence of >5% weight loss in 2010 and 2013, and the number of remaining teeth in 2010 were used as the outcome, mediator, and explanatory variable, respectively. We conducted the causal mediation analysis using Cox proportional hazard model. Hazard ratios (HRs) and 95% confidence intervals (95% CIs) of total effect (TE), natural indirect effect (NIE), and proportion mediated (PM) were estimated, respectively. Among the 34,510 participants, the mean age was 72.6 (SD =5.4), and 47.6% were men. From 2013 to 2020, 14.0% of the participants (n=4,825) died, 60.5% (n=20,871) had 0–19 remaining teeth in 2010, and 17.2% (n=5,927) experienced >5% weight loss from 2010 to 2013. The mortality rate was 0.016 per person-year among those with ≥20 remaining teeth and 0.027 per person-year among those with 0–19 remaining teeth. Weight loss of 5% significantly mediated the association between tooth loss and higher mortality risk (TE: HR, 1.27 [95%CI, 1.16 to 1.39]; NIE: HR, 1.02 [95%CI, 1.02 to 1.03]; PM, 11.1%). The present study suggested that weight loss is one of the possible mechanisms linking oral and systemic health among older adults.

Biography:
Dr Taro Kusama is an assistant professor at the Division of Regional Community Development of the Liaison Center for Innovative Dentistry, Tohoku University Graduate School of Dentistry. He obtained his DDS from the Tohoku University School of Dentistry in 2016, and obtained his PhD from the Tohoku University Graduate School of Dentistry in 2021.
P-1
Can preprocedural mouthrinses reduce SARS-CoV-2 load in dental aerosols?

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Abstract:

Aim: This literature aims to find the possibility of oral rinsing prior to dental therapy to reduce cross-infection of SARS-CoV-2.

Method: Author searched published clinical features from PubMed, Google Scholar, and hand searched library online databases, from January 2020 to March 2021. Keywords used were “COVID-19”, “Dental protection”, “oral rinse”, “mouthrinsing”, with their combinations.

Result: Four oral rinses with main ingredient such as chlorhexidine, povidone iodine, essential oils, and hydrogen peroxide were investigated through several references to find it’s efficacy in decreasing SARS-CoV-2 load.

Conclusion: Usage of oral rinse prior to dental therapy may reduce SARS-CoV-2 load and decrease cross-infection risk in a dental setting. Based on the references we have reviewed, there is a possible benefit from using oral rinse prior to elective dental procedures in decreasing SARS-CoV-2 load and cross-infection.

P-2
Relationship between stunting and dental caries by ICDAS index

Sheryn Callista Lorenzent
University of Sumatera Utara, Faculty of Dentistry, Sumatera, Indonesia

Abstract:

Aim: To determine the relationship between stunting and depth of caries in deciduous teeth using the ICDAS index in elementary school students.

Method: This type of research is an analytic survey with a cross-sectional design. Population is students in 106448 Elementary School Students, Bagan Serdang Village, Pantai Labu Sub-district, Deli Serdang. The sampling technique is done by simple random sampling totaling 79 children. The nutritional status of children is measured by comparing height body against age TB/U using a microtoise staturemeter and depth caries was measured using the ICDAS index. Data analysis was carried out with unpaired t-test.

Result: The highest category of depth of caries is the manifest caries lesion (ICDAS 4-6) 3.90 ± 1.81 for stunting respondents, whereas the mean value for severe stunting respondents is 5.75 ± 1.29. Statistical analysis shows a relationship between stunting and depth of caries in the caries-free category (p=0.043), initial caries lesion (ICDAS 1-3) (p=0.002), and manifest caries lesion (ICDAS 4-6) (p=0.001)

Conclusion: The more severe the stunting child is, the deeper the caries. This study highlights the need to prevent child undernutrition, especially from the first day of pregnancy, the birth of a baby for up to 2 years which is the first 1000 days of human life called the windows opportunity. This is an important part of programs to prevent tooth decay.
P-3
Protective effect of quercetin against dentin erosion and abrasion

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Abstract:

**Aim:** To evaluate the in situ/in vivo effect of quercetin on dentin erosion and abrasion.

**Method:** The human dentin blocks were assigned to 6 groups: 75 μg/mL, 150 μg/mL and 300 μg/mL quercetin (Q75, Q150, Q300), 120 μg/mL chlorhexidine (CHX, positive control), and deionized water and ethanol (the negative controls), respectively. The specimens were treated with the respective solutions for 2 min and then subjected to in situ/in vivo erosive/abrasive challenge for 7 d. Dentin loss was assessed by profilometry. The impact of quercetin on dentin-derived matrix metalloproteinases (MMPs) inhibition was evaluated by in situ zymography. The impact of quercetin on mechanical properties of dentin collagen fiber was measured by ultimate micro-tensile strength test (μUTS). The data were analyzed by one-way analysis of variance and Tukey’s test (α = 0.05).

**Result:** All treatment solutions significantly reduced the dentin loss when compared to the negative controls. The dentin loss of Q150 and Q300 were significantly less than CHX (P all < 0.05). In-situ zymography showed that quercetin significantly inhibited the activities of dentin-derived MMPs. The inhibitory percentage of Q75 and Q150 were significantly lower than CHX (P all < 0.05), but no significantly difference was found between Q300 and CHX (P = 0.58). Statistically significant increase in μUTS values were observed for demineralized dentin beams after quercetin treatment when compared with the control groups (P all < 0.05).

**Conclusion:** Quercetin could prevent dentin from erosion and abrasion via inhibiting dentin-derived MMPs activity as well as enhancing the mechanical properties of DOM.

**Acknowledgement:** This research project was supported by the Guiding Project for Scientific and Technological Innovation of Fujian Province (2019Y9030).

P-4
Accuracy of implant impression techniques for partially edentulous arches

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Abstract:

**Aim:** To evaluate the trueness and precision of intraoral scanning technique compared to open-tray technique for two-implant-supported restorations under intraoral conditions.

**Method:** Four volunteers were recruited for this study. Four implant site simulators (ISS) made from ethylene vinyl acetate (EVA) sheets and resin blocks were fabricated for each volunteer. Each ISS contains two parallel implant analogs respectively and locations were as follows: maxillary posterior/anterior region (MaxP/MaxA), mandibular posterior/anterior region (ManP/ManA). Then the ISSs were positioned into volunteers’ mouth and 5 impressions were taken by open-tray technique (CIT) and intraoral scanning technique (DIT) for each ISS, respectively. Linear distance and angulation between two analogs were measured in Creo Parametric 8 and calculated for trueness (Δd, Δθ) and precision (dP, 0p). The 2-way ANOVA and t tests were performed to compare two techniques.(α=0.05)

**Result:** In MaxP and ManP regions, the Δd and Δθ of DIT was significant larger than those by CIT (All p<0.05). In MaxA region, the Δ0 of CIT was significant larger than those by DIT (p<0.001). In ManA region, there was no significant difference in Δd and Δθ between CIT and DIT. The dP and 0p of CIT was significant lower than that of DIT in all regions (All p<0.05).

**Conclusion:** The CIT in MaxA and ManA regions showed comparable or even better trueness to DIT. However, for MaxP and ManP regions, DIT was also recommended. Meanwhile, the precision of CIT appeared to be significant higher than those of DIT in all regions.
P-5
FAT1 upregulates in OSCC and promotes cell proliferation

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Abstract:
Aim: Previous studies have revealed FAT atypical cadherin 1 (FAT1) plays a tumor suppressive or oncogenic role in a context-dependent manner in various cancers. However, the functions of FAT1 are ambiguous in tumorigenesis owing to inconsistent research in oral squamous cell carcinoma (OSCC). The present study aimed to gain an insight into the role of FAT1 in the tumor genesis and development.
Method: The expression, mutant and survival data analysis were done using data from the Cancer Genome Atlas (TCGA), the Gene Expression Omnibus (GEO) and the Clinical Proteomic Tumor Analysis Consortium (CPTAC) database, verified with clinical samples via real-time polymerase chain reaction (qRT-PCR), western blot (WB) and immunohistochemical (IHC) staining. OSCC cells transfected with siRNA were employed for in vitro assessment of cell proliferation, apoptosis, migration ability in appropriate ways. The underlying mechanism was explored by RNA-sequencing after FAT1 silencing.
Result: Overall, FAT1 significantly raised in OSCC with a poor prognosis outcome. The in vitro experiment showed the promoting effect of FAT1 in the proliferation and migration of OSCC cells. FAT1 can also inhibit both the early and late apoptosis of OSCC cells. RNA-sequencing analysis of FAT1 silencing revealed that the cell cycle, DNA replication, and some core genes (MCM2, MCM5, CCNE1, SPC24, MYBL2, KIF2C) may be the potential mechanism in OSCC.
Conclusion: FAT1 may act as oncogenesis in OSCC with potential mechanisms influencing the cell cycle and DNA repair.
Acknowledgement: This work was supported by the National Natural Sciences Foundation of China (grant number 81872186).

P-6
A near-infrared probe detecting EGFR in oral Squamous carcinoma cell

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Abstract:
Aim: To develop an EGFR probe with excellent performance in oral Squamous carcinoma cell.
Method: In the present study, an active turn-on EGFR probe was synthesized by adding Sodium hypochlorite into coumarin. The structure of the probe was determined by means of mass spectrometry, the spectral properties of the probe were analyzed, and the maximum emission wavelength and biological activity of the probe were studied.
Result: After adding hydrogen peroxide (λ =441nm) or sodium hypochlorite (λ =450nm) to the coumarin probe, the fluorescence intensity is enhanced, and the fluorescence intensity increases with the increase of the concentration. The probe can also work no matter in strong acid (pH=5) or alkali (pH=12). The effect of the reaction time on the fluorescence intensity is not obvious.
Conclusion: The near-infrared fluorescent probe has novel structure, and excellent photophysical properties. The biocompatibility of the probe will continue to be studied in the future, to create a near-infrared fluorescent probe for diagnosis and treatment.
Acknowledgement: This study is supported with Fujian Science and Technology Plan.
P-7
Effect of Er:YAG laser assisted SRP on biocompatibility of root

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Fujian Medical University School of Stomatology, Fuzhou, China

Abstract:
Aim: The purpose of this study is to explore the mechanism of root biocompatibility of Er:YAG laser-assisted SRP in the treatment of periodontitis, so as to strengthen the application of Er:YAG laser in periodontal therapy.
Method: In this study, we analyzed the effects of different treatments on the physical and chemical properties of root surface, and the effects of different treatment groups of root slices on the bioactivity of PDLCs, in order to determine the mechanism of biocompatibility of Er:YAG laser-assisted SRP in the treatment of periodontitis.
Result: It was found that Er:YAG laser assisted SRP therapy in periodontitis can affect the root surface morphology, hydrophilicity, roughness and other physical and chemical properties, and promote the proliferation of PDLCs in the root surface, but the effect of promoting osteogenic differentiation is not obvious.
Conclusion: These results suggest that Er:YAG laser assisted traditional ultrasound or ultrasound + manual curettage in the treatment of periodontitis can effectively change the physicochemical properties of root surface and improve the biocompatibility of root surface to some extent, which is an effective method of periodontal therapy.
Acknowledgement: This study was supported by the National Natural Science Foundation of China (Grant No. 81870766)

P-8
Effects of functional shift on rats' craniofacial growth and development

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Abstract:
Aim: This study investigated the effects of functional lateral shift on the craniofacial complex in growing rats.
Method: Eighty 5-week-old male Sprague-Dawley rats were randomly divided into an experimental group (n=40), which received an oblique guide appliance that shifted the mandible to the left during closure, and a control group (n=40). The rats were scanned by cone-beam computed tomography at 3 days and 1, 2, 4, and 8 weeks. Dimensions of the mandibular bone, condyle, maxilla and cranium were measured.
Result: Mandibles of rats in the experimental group were smaller than those in the control group and were asymmetrical. Condyles of rats in the experimental group were thinner than those of controls. Condyle length on the ipsilateral side was shorter and wider than that on the contralateral side from 4 to 8 weeks. No significant differences in cranial length or height were observed between the experimental and control groups. The height of the upper first molar and alveolar bone on the contralateral side was significantly smaller than that on the ipsilateral side and in controls from 4 to 8 weeks.
Conclusion: Functional shift of the mandible produces morphological asymmetries in the mandible and maxillary region and may cause bilateral condylar degenerative changes.