

16th IDCMR Conference

Reinventing Dentistry for the Artificial Intelligence era

26th-28th October 2022

Venue: CIDS, Coorg, Karnataka, India

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Dear colleagues,

The organizing committee of the 16IDCMR extend a warm invite to you to attend this conference in exotic India a place known for its rich culture, heritage and technical prowess. The Conference is planned around the theme of “Artificial Intelligence in the digital era : Reinventing Dentistry” and will have prominent speakers sharing their experiences in the fields of predictive diagnostics and artificial intelligence its integration into treatment to list a few integration into treatment to list a few.

The sessions will have speakers from Asia, Europe, USA and other key countries, we expect a wide participation from South east Asia, Japan and of course India. While the scientific sessions whet your intellectual appetite, we will also ensure that your gastronomic senses are satisfied thorough our themed gala dinners focusing on the culinary delights of southern India.

We will also take you on estate walks with the legend of the dancing goats, in the birthplace of Indian coffee. Cultural sessions themed on the melting pot of cultures that is India will enthrall you every day.

For those of you bitten by the travel bug we promise you an experience of a life time as we will take you through history, mythology and ancient science in the UNESCO world heritage sites of Belur and Halebid. The nature lovers amongst you will be in the lap of nature and will have an opportunity to sight the Indian tiger, the Indian elephant and the bison in the jungles of Nagarhole.

We invite you to join us for what will be a peek into the cutting edge technologies that will drive knowledge but also provide you with opportunities to interact with the experts on a personal basis.

Organizing committee.

MESSAGES

Clinical Professor Dr. Sirichai Kiattavorncharoen

Dean, Mahidol University Faculty of Dentistry
IDCMR Secretariat Office



Dear IDCMR colleagues and distinguished participants,

I am delighted to cordially welcome you, on behalf of the IDCMR Secretariat Office, to the 16th International Dental Collaboration of the Mekong River Region (IDCMR) congress, taking place from October 26–28, 2022.

With the global situation of COVID-19 appearing to be transitioning from a pandemic to an endemic disease, the IDCMR congress will return this year with on-site participation. I would like to express my gratitude to our respected host, Coorg Institute of Dental Sciences, India, for their contribution to the successful hosting of the 16th IDCMR.

The congress theme, “Artificial Intelligence in the Digital Era: Reinventing Dentistry” will highlight the importance of Artificial Intelligence in Dentistry, which has increased in numerous industries in recent years, including dentistry. Starting with initial consultations, diagnosis, and treatment planning to surgical procedures and aftercare. We will look at some of the current trends in this field and see what role AI is expected to play in dentistry's future.

Several topics will be covered by high-profile and well-known international speakers. In keeping with the theme, you will be able to discuss numerous topics from various perspectives, cultural backgrounds, and other scientific evidence or clinical experience. In a parallel session, scientific workshops will be held to experiment with new materials and technologies or to go deeper into the topic matter of the keynote presentation.

With all these, I wish you all a fruitful outcome of the congress and a rewarding learning experience here in India.

MESSAGES

Dr. Prof. Sunil Muddaiah

Organizing Chairman-16th IDCMR
Founding Dean, CIDS, INDIA



Dear IDCMR colleagues and distinguished participants,

It is my pleasure to welcome you to the 16th IDCMR conference to be held at Coorg Institute of Dental Sciences (CIDS) from 26th to 28th October 2022.

The Organizing Committee is proud to extend a warm invitation to all delegates of the 16th IDCMR Conference, which is being hosted for the very first time in India by the Coorg Institute of Dental Sciences. The theme for this year's conference is "Artificial Intelligence in the Digital Era: Reinventing Dentistry" and will have prominent speakers sharing their experiences in the fields of predictive diagnostics and artificial intelligence along with its integration into treatment plans. The sessions will have Pan Global speakers and we expect a wide participation from across Southeast Asia and India.

We invite you to join us for what will be a peek into the cutting edge technology that will drive dentistry into the future. The sessions and panel discussions have been planned to provide enough time not only for knowledge assimilation but also to provide you with opportunities to interact with the experts on a personal basis.

Coorg will be at its pristine best in October with temperatures ranging from 18° – 22° C.

Coorg is a 4,102 sq.km province in South West India. It is a live tapestry of captivating natural beauty, cuisine and aroma! Described as the Scotland of India, it is set amidst verdant valleys, imposing mountains and coffee plantation in the Western Ghats of India.



MESSAGES

Dr. MK Ramesh
Vice Chancellor

I am delighted to learn that the Coorg Institute of Dental Sciences, Virajpet is hosting the 16th International Dental Collaboration of Mekong River Region (IDCMR) from 26th to 28th October 2022.

As the global trends increasingly establish collaborative learning as the new normal, the healthcare professionals need to adapt to the changed circumstances, and make efforts to excel. The collaborative nature of the IDCMR is a step in the right direction to mainstream our dental professionals in the areas of education, innovation, and research.

The current edition of IDCMR has 'Reinventing dentistry for the artificial intelligence' as the theme. Artificial Intelligence and Virtual Reality are the benchmarks of innovation in the 4th Industrial Revolution that set the benchmarks for creativity in the new world order of academic expression.

I am hopeful that the 16th edition of IDCMR will explore the applications and their feasibility of artificial intelligence in oral healthcare services and build a strong foundation for the future actions.

I wish the 16th International Dental Collaboration of Mekong River Region at Coorg Institute of Dental Sciences, Virajpet, a grand success.

MESSAGES

Professor Dato' Dr Mohamed Ibrahim Abu Hassan

Advisor of 16th IDCMR Conference
DSPN, BDS (Malaya), MDSc (Leeds),
PhD (Bristol) FDS RCPS (Glasgow), FICD
Professor of Restorative Dentistry
Faculty of Dentistry, Universiti Teknologi MARA



Firstly, I would like to thank you to the organizing committee for giving me this opportunity to say a few words. Congratulations to Prof Dr Sunil and team for putting the program 16th. IDCMR in place. The theme chosen for this conference is well suited the current state of the dental profession i.e. Reinventing Dentistry for the Artificial Intelligence Era.

Since we still in Pandemic time, the organizing committee had decided to have the conference in hybrid mode. This will certainly boost more participation from our member school. This year the organizing committee line-up speakers both locally from India and three other international speakers from Australia, Indonesia and Thailand. This is preceded with 3 preconference workshop in laser, forensic dentistry and soft skills in dentistry.

I hope all participants will benefit from the programs put together by the local organizing committee led by Prof. Dr Sunil Muddaiah and congrats to the team who had worked to ensure the 16th. IDCMR meeting run successfully.

MESSAGES

Professor Chun-Hung Chu

BDS, MDS, PDipDS, PhD, FCDSHK, FHKAM(DS), MAGD, ABGD,
FDSRCSEd, FFDTEd, FRACDS(GDP), FRACDS(DPH), FICD, FADM



Associate Dean, Faculty of Dentistry, The University of Hong Kong
President, Society of Preventive Dentistry of Hong Kong
President, Asia Academy of Preventive Dentistry
Member, FDI Public Health Committee
Vice President, Asian and Oceanian Federation of Conservative Dentistry
Immediate Past President, South East Asians Association for Dental Education

It gives me great pleasure to congratulate the International Dental Collaboration of the Mekong River Region (IDCMR) on behalf of the Faculty of Dentistry, The University of Hong Kong, for all its achievements since its inception in 2004. The IDCMR founded by dental education institutes from Cambodia, PR China, Laos PDR, Thailand and Vietnam has been a great platform for dental practitioners and academics to share experiences and knowledge through sessions, presentations, workshops and gala dinner. It has always strived to provide the opportunity for the participants to maximize their potential to achieve for the common good around the Mekong River Region.

The Faculty of Dentistry, The University of Hong Kong has always been an active participant to the IDCMR in promotion of collaborative research and information exchange. I keenly look forward to witnessing the continuous achievement of the 16th IDCMR along its goals and vision on resource development for long term cooperation and embracement of dental health education among the Mekong River Region for improving the oral health status among private, government and non-government institutions.

MESSAGES

Dr. Anmol Kallha

Prof Emeritus, Distinguished Professor and
Advisor Coorg Institute of Dental Sciences, India
Assoc. Director and Amp; Advisor, Max Health Care,
Chief Architect and Cofounder Smart Health AI



It is a great privilege to host the 16th conference of the IDCMR in Virajpet, Karnataka, India. This unique collaboration of nations has grown from strength to strength, building a platform to share research, innovation and knowledge. The region brings unique oral health challenges and a common platform bring in the vigour of creative thinking and fostering education, research and clinical best practices which will influence the entire ecosystem of oral health sciences.

Emerging from the shadows of the deadly Covid pandemic, oral health assumes a new impetus. This nasopharyngeal virus is being associated with the oral health status and severity of the manifestation. It would be a great initiative if we could collate end look at the experiences of covid in the member nations and build a valuable body of research that could help in future situations. The need to emphasize oral medicine, pathology, and role of dental surgeons in the forefront in recognition and management of disease also brings about a focus on dental public health and changes in the UG/PG curricula to build a valuable response to such global health issues. I am sure the deliberations of this conference will provide valuable answers.

I welcome all the delegates and participants and wish you a great meeting.

MESSAGES

Dr. Nia A. Ismaniaty Noerhadi

DDS., MDS.

Dean Faculty of Dentistry Universitas Indonesia



Dear Colleagues, On behalf of Faculty of Dentistry, Universitas Indonesia, we are delighted to invite all of the scientists, academicians, researchers, delegates and dental students from Mekong River and other regions to join the 16th International Dental Collaboration of the Mekong River Region (16th IDCMR) 2022 that will take place on 26-28 October at Coorg Institute of Dental Sciences, Virajpet, Coorg, Karnataka, India. The theme for this year's conference is "Reinventing Dentistry for the Artificial Intelligence Era". We are glad because this year we can finally meet up in-person. A group of scientists will take turns presenting and exchanging ideas on new breakthroughs related to dental research as well as dental education and clinical practice in their respective countries. This activity offers an extensive scientific program, oral presentations, workshops, scientific competitions, and many more. We hope this opportunity can provide all of us to expand our network and also to strengthen the relationship between dental professionals and dental academics in the Coorg Institute of Dental Sciences area and beyond. Don't miss the chance to be a part of 16th IDCMR! Send your scientific paper immediately and we cannot wait to meet you in India! Stay healthy and let us advance dental research together!

ORGANISING COMMITTEE

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Professor of Restorative Dentistry & Former Dean of UiTM



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Professor Chun-Hung Chu

Associate Dean (External Relations), Faculty of Dentistry, The University of Hong Kong President, Society of Preventive Dentistry of Hong Kong (2021-2023) President, Asia Academy of Preventive Dentistry (2021-2023) Member, FDI Public Health Committee (2021-2024) Vice President, Asian and Oceanian Federation of Conservative Dentistry (2020-2023) Immediate Past President, South East Asians Association for Dental Education (2020-2022)



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PROGRAMME SCHEDULE

Day 1: 26th October 2022 (Wednesday)

09:00 am – 01:00 pm:	PRECONFERENCE WORKSHOP 1: DIODE LASER APPLICATION IN DENTAL PRACTICE
01:30 pm – 05:30 pm:	PRECONFERENCE WORKSHOP 2: SOFT SKILLS IN DENTAL PRACTICE
01:30 pm – 05:30 pm:	PRECONFERENCE WORKSHOP 3: FORENSIC ODONTOLOGY

Day 2: 27th October 2022 (Thursday)

08:30 am – 09:00 am:	REGISTRATION
09:00 am – 09:30 am:	INAUGURATION
09:30 am – 10:30 am:	KEYNOTE SPEAKER 1 Prof. Marc Tenant, University Of Western Australia Topic: The Application of Contemporary Software and Hardware to Resolving Some of the Grand Challenges Facing Dental Public Health in the 21st Century
10:30 am – 10:45 am:	TEA BREAK
10:45 am – 11:45 am:	Scientific session ORAL / POSTER PRESENTATION
12:00 PM – 01:00 PM:	KEYNOTE SPEAKER 2 Mr. Venugopal Rao Manneni Topic: Introduction to Artificial Intelligence and Case Analysis
01:00 pm – 02:00 pm:	LUNCH BREAK
02:00 pm – 03:00 pm:	Scientific session ORAL / POSTER PRESENTATION
03:00 pm – 04:00 pm:	KEY NOTE SPEAKER 3 Prof. Dr. Madhu Hariharan, Asian Academy of Laser Therapy Topic: Laser Esthetics: Current Concepts
04:00 pm – 04:30 pm:	TEA BREAK
05:00 pm – 06:00 pm:	IDCMR COUNCIL MEETING
07:00 pm onwards:	CULTURAL EVENING AND GALA DINNER at AGLAONEMA HOTELS & RESORT



Day 3: 28th October 2022 (Friday)

09:00 am – 10:00 am:	KEYNOTE SPEAKER 4 Dr. Nia Ayu Ismanati Noerhadi, Dean, Universitas Indonesia, Djakarta Topic: Will Innovations in Teledentistry be the Answers for Post Covid-19 Pandemic Era?
10:15 am – 11:15 am:	Scientific session ORAL / POSTER PRESENTATION
11:15 am – 11:30 am:	TEA BREAK
11:30 am – 12:30 pm:	KEYNOTE SPEAKER 5 Dr. Akhilanand Chaurasia, King George's University, Lucknow, India Topic: Artificial Intelligence-Based Diagnosis of Salivary Gland Disorders Using Sialo -CBCT
12:30 pm – 01:30 pm:	LUNCH BREAK
01:30 pm – 02:30 pm:	Scientific Session TABLE CLINIC
02:30 pm – 03:30 pm:	KEYNOTE SPEAKER 6 Asst. Prof. Woranun Parpanslip, Faculty of Dentistry, Mahidol Topic: Artificial Intelligence Development in Dentistry and its Application to the Benefit of Mankind
03:30 pm – 03:45 pm:	TEA BREAK
03:45 pm – 04:30 pm:	CLOSING CEREMONY

KEY NOTE SPEAKERS



Prof. Marc Tennant

Winthrop Professor,
University Of Western Australia

The Application of Contemporary Software and Hardware to Resolving Some of the Grand Challenges Facing Dental Public Health in the 21st Century.

Winthrop Professor Marc Tennant AM

The world faces major challenges over the next quarter century in health. Giving access to millions of people, the challenges of demographic change and urbanisation. Oral Health is not immune from these challenges. Marc will outline, based on his 30 years of experience as a leading policy advocate in public health in dentistry, what he sees these challenges. He will look at population demographics, Aging, Remote area health and workforce. He will examine in detail some of the software tools dental public health can use to tailor solutions to the challenges that lie ahead. He will also talk of the opportunities that AI and robots will bring to dental health. It will be a tour of opportunity for the next generation to take and make a better world for everyone.



Venugopala Rao Manneni

Osmania University
Hyderabad, India

Introduction to Artificial Intelligence and Case Analysis (Need. Opportunities. Challenges. Applications)

Abstract

Artificial intelligence (AI) is regarded as the 21st century's most transformational technology. AI technologies, which are becoming more prevalent in modern business and daily life, are now being used in healthcare.

AI has the potential to transform how care is delivered. It can support improvements in care outcomes, patient experience and access to healthcare services. It can increase productivity and the efficiency of care delivery and allow healthcare systems to provide more and better care to more people. AI can help improve the experience of healthcare practitioners, enabling them to spend more time in direct patient care and reducing burnout. Finally, it can support the faster delivery of care, mainly by accelerating diagnosis time, and help healthcare systems manage population health more proactively.

When compared to other industries, healthcare is more conservative, where the cost of error would be high. Therefore, most healthcare innovations are carefully monitored by registering and approving authorities, as well as by physicians who use new opportunities.

This lecture entitles, need opportunities and challenges of the use of AI in Healthcare; how healthcare has transformed from expert based decision making to real time evidence-based decisions; how AI augments clinical expertise of the physicians and helps with decisions at point of care. The talk also focuses on how to counter some unique healthcare challenges using AI concepts of explainability and causality.



Prof. Dr. Madhu Hariharan

Asian Academy of Laser Therapy
Singapore

Topic: Laser esthetics

The lecture will be covering the current concepts of how to use Diode and All Tissue lasers in Dentistry. The importance of pink and white esthetics and how Lasers can improve the relationships between the two will also be explained . An overview of various applications and a basic insight into various wavelengths of lasers available for dental applications will also be covered during this session



Dr. Nia Ayu Ismaniati Noerhad

Dean, Faculty of Dentistry, Universitas Indonesia
Academic staff, Orthodontics Department, Faculty of Dentistry, Universitas Indonesia

WILL INNOVATIONS IN TELEDENTISTRY BE THE ANSWERS FOR POST COVID-19 PANDEMIC ERA?

COVID-19 pandemic has affected whole sectors of human life and altered human lifestyle since 2020. Physical distancing to reduce in-person contact is considered beneficial to prevent COVID-19 disease transmission. Thus, people have become more dependent on their gadgets and social media. A smartmobile phone is included in people's bags as "a must" item list. Digital technologies have been rapidly developed and adjusted to support human activities, including dentistry. Recently, digital dentistry development in orthodontics, such as 3D scanners and digital study models, has become more familiar and studied extensively, especially in effectiveness and accuracy related to the usage of Aligners. Teledentistry, as a part of digital dentistry, has been studied since 1989. During the COVID-19 pandemic, teledentistry has been developed and can be used on the mobile phone to accommodate the needs of dentist-patient communication without in-person meetings. In orthodontic field, teledentistry has been developed to facilitate doctor-patient communications, data retrieval, and treatment monitoring. The application of teledentistry in orthodontic treatment may reduce in-person meetings between orthodontists and patients, while the virtual consultation may eventually increase



Dr. Akhilanand Chaurasia

King George's University
Lucknow, India

Title: Artificial intelligence based diagnosis of salivary gland disorders using Sialo-CBCT

Abstract

Salivary gland tumors accounts for less than 3% of head and neck neoplasms. Salivary gland tumors involve the parotid gland and most of the remaining lesions are in the submandibular gland. Approximately 80% Salivary gland tumors are benign and 80% of these benign lesions are pleomorphic adenoma and 10% are Warthin tumor. Malignant tumors account for 4-20% of salivary gland tumors such as mucoepidermoid carcinoma (35%), pleomorphic adenoma with malignant degeneration. Sialography is a well-established tool which demonstrates the fine morphology of the salivary duct system. Traditional sialography using plain radiography has been replaced by Cone beam computed tomography-sialography (sialo-CBCT) due to increased spatial resolution, accessibility and 3-dimensional representation using a relatively low radiation dose. Since the examination of the Sialo-CBCT scans is challenging due to the salivary ducts complexity, oral radiologists perform their evaluation on 2D Maximum Intensity Projection images. This results in a mostly qualitative, incomplete, and observer-dependent analysis. By using artificial intelligence, we have developed an automatic method for the segmentation and comprehensive quantitative structural analysis of the parotid salivary ducts in sialo-CBCT scans. It consists of segmentation of the primary and secondary ducts, computation of 3D tree model of salivary gland, quantitative analysis of salivary gland features and visualisation of tree model. By using Artificial intelligence, the salivary gland pathologies can be diagnosed with utmost accuracy and specificity overruling the human eye limitations.



Asst. Prof. Woranun Parpanslip

Faculty of Dentistry, Mahidol

AI in Dentistry and its Application for the Benefit of Mankind

Artificial intelligence (AI) has developed significantly over the past two decades. It can imitate human behaviour to make decisions under complex conditions. The models of AI, such as convolutional neural networks (CNN) and artificial neural networks (ANN), have shown a wide range of applications in every area, including dental and medical science.

In dentistry, AI is being explored for a variety of purposes, with recent progress in digitised data acquisition, from the basic step of taking a patient's history to data processing and deriving from the data for the correct diagnosis of diseases and prediction of treatment outcomes. AI can be utilised in providing dental education and oral health services, such as screening for oral health problems, handling appropriate appointments for services, creating preventive strategy, and aiding in Restorative Orthodontics Periodontics and Oral Surgery. This helps dentists to provide better treatment and leads to better health care for patients.

At the Faculty of Dentistry, Mahidol University, we are operating the Dental Simulation Center and the Mahidol Digital Dental Center while creating AI applications in the Detection System for Orthognathic Surgery. These are the first examples of application in training and treatment with the modern technology in our faculty. We strive to incorporate an entire information system to synchronise academic and non-academic settings in order to obtain a comprehensive SMART Dental Application that is user-friendly for everyone. We intend to integrate this technology in the future to achieve excellence in our dental practice as well as an efficient management system that benefits dental students, dentists, patients, communities and society.

Oral Presentation Schedule

DAY 2 - 27th OCT 2022 MORNING SESSION ORAL - CASE REPORT

Sl. No	Room allotted	ID	Title	Presenter	Category	Of-line/ Online	Time Schedule
1	1 (AV ROOM)	22P01	Dental management of a child with Rubinstein-Taybi Syndrome: A case report	Navaphan Rat-tanapakdeekul	PG Case Report	Offline	10.45 am – 10.55 am
2		22P02	Ellis-van Creveld Syndrome – A Rare Disorder with Characteristic Clinical and Oral manifestations: A case report	Sutthiprapa Ungkul	PG Case Report	Offline	10.55 am – 11.05 am
3		22P04	Clinical management of children with risk of infective endocarditis in dental practice	Walanya Sakolware	PG Case Report	Offline	11.05 am – 11.15 am
4		22P05	Supernumerary teeth in a non-syndromic pediatric patient: a case report	Yuwapa Cheevar-ungnapakul	PG Case Report	Offline	11.15 am – 11.25 am
5		22P07	Severe traumatic dental injuries in primary incisors: A case report	Tahsin Hossain Anika	PG Case Report	Offline	11.25 am – 11.35 am
6		22P08	Multidisciplinary Approach for Orbital Rhabdomyosarcoma in a pediatric patient: A Case Report	Kitiwadee Choonhawarakorn	PG Case Report	Offline	11.35 am – 11.45 am
7		22P34	Correction of Unilateral Cleft Lip, Palate and Alveolus Through Presurgical Nasoalveolar Molding Assisted Primary Reconstruction in A Newborn Child Using PSIO-J Hook Appliance- A Case Report	Dr. Pooja Sharma	PG Case Report	Offline	11.45 am – 11.55 am
8		22P35	Enmasse Distalization Of Maxillary and Mandibular Arch Using Infra Zygomatic Crest and Buccal Shelf Implants	Dr. Harinarayan	PG Case Report	Offline	11.55 am – 12.05 pm

DAY 2 - 27th OCT 2022 MORNING SESSION

ORAL - ORIGINAL RESEARCH

Sl. No	Room allotted	ID	Title	Presenter	Category	Of-line/ Online	Time Schedule
1	2 (ICE ROOM)	22U11	Patient Safety Events in a Diagnostic and Emergency Care Clinic, Mahidol Dental Hospital, Thailand.	Napakorn Wongpisal	UG Original Research	Offline	10.45 am – 10.55 am
2		22F12	Macrolide nanofibers Scaffolds: The Pilot Experience	Afzan Adilah	Faculty Original Research	Offline	10.55 am – 11.05 am
3		22P19	Analysis of Oral Health Workforce Distribution for School Dental Services in Pahang	Mohd Hidir Bin Mohd Atni	PG Original Research	Offline	11.05 am – 11.15 am
4		22P16	The perception and utilisation of dental personnel in the dental public health specialist unit, alor setar, kedah	Nurul Fahizha F	PG Original research	Offline	11.15 am – 11.25 am
5		22U20	Beverage Sugar Content and Acidity and its Association with Dental Students' Consumption Behavior in Malaysia	Noor Aina Shuhada Binti Mohd Amin	UG Original Research	Offline	11.25 am – 11.35 am
6		22F18	Assessing the dental students' perspectives about artificial Intelligence in dentistry"-A questionnaire study.	Dr. Sujata Byahatti	Faculty Original Research	Online	11.35 am – 11.45 am
7		22P13	Biological properties of the tooth-derived bone substitute and bone regeneration in periodontal defect models	Rui Zhang	PG Original Research	Online	11.45 am – 11.55 am
8		22F17	Accuracy of machine learning model in the detection and classification of apical lesions in periapical radiographs	Do Hoang Viet	Faculty Original Research		11.55 am – 12.05 pm

DAY 2 - 27th OCT 2022 MORNING SESSION

ORAL - REVIEW

Sl. No	Room allotted	ID	Title	Presenter	Category	Of-line/ Online	Time Schedule
1	3 (BOARD ROOM)	22P06	Self assembling peptide P11 4: A Biomimetic Agent	Ananya Udomsit	PG Review	Offline	10.45 am – 10.55 am
2		22P30	AI assisted Ia in dentistry	Dr. Treesa	PG Review	Offline	10.55 am – 11.05 am
3		22P31	Endodontics: from dark to dawn sacred-o-bag approach (a futuristic approach in pediatric endodontics)	Dr. Heena	PG Review	Offline	11.05 am – 11.15 am
4		22P43	AI in dentistry-using a digital platform to consult reduces in procuring preventive care gear- a review	Dr. Deepti Monica	PG Review	Offline	11.15 am – 11.25 am
5		22F47	Oral Cancer Stem Cells: "Mirage" or "Reality"- A Meta Analysis Research	Dr. Gaurav	Faculty Review	Offline	11:25 am- 11:40 am
6		22F48	PLUMES -AN UNWIND STORY	Dr. Rashmi	Faculty review	Offline	11:40 am- 11:50 am
7		22P49	Noble use of artificial intelligence in dentistry: a narrative review	Dr. Athul Ramesh	PG Review	Offline	11:50 pm- 12:00 pm
8		22P03	The current use of AI in Pediatric Dentistry	Natnicha Sributsayakarn	PG Review	Offline	12.00pm – 12.10 pm
9		22F25	AI and Robotics in restorative dentistry and endodontics – not a science fiction anymore	Dr. N Shubhashini	Faculty Review	Online	12.10 pm – 12.20 pm
10		22P14	Applications of copper nano particles in dentistry	Veena Wen-quing Xu	PG Review		12.20 pm – 12:30 pm
11		22P24	Silver Diamine Fluoride Therapy for Dental Care	Faith Miaomiao Zheng	PG Review		12:30 pm – 12:40 pm

DAY 3 - 28th OCT 2022 MORNING SESSION

ORAL - CASE REPORT

Sl. No	Room allotted	ID	Title	Presenter	Category	Of-line/ Online	Time Schedule
1	1 (AV ROOM)	22P10	Visual Pedagogy in Dentistry for Autism Spectrum Disorder and Attention Deficit Hyperactivity	Kanyanan Ramayasinpong	PG Case Report	Offline	10.15 am – 10.25 am
2		22P29	Novel technique of PRF induced reimplantation	Dr. Sampreetha Somashekar	PG Case Report	Offline	10.25 am – 10.35 am
3		22P09	The management of Natal tooth in Bilateral cleft lip and cleft palate before NAM fabrication	Thanapha Putthanuparp	PG Case Report	Offline	10.35 am – 10.45 am
4		22P37	“Silencer appliance – sleep like a baby”	Dr. Shringa	PG Case Report	Offline	10.45 am – 10.55 am
5		22P38	Presurgical nasoalveolar moulding – a boon for the unprivileged: a case report	Dr. Ambika Jayaram	PG Case Report	Offline	10.55 am – 11.05 am
6		22P39	Non-surgical correction of nonsyndromic unilateral condylar aplasia with hemifacial microsomia- a case report	Dr. Nafeesa Shaduly	PG Case Report	Offline	11.05 am – 11.15 am
7		22U15	Direct Class IV Restoration Using Single-Shade Composite Resin: Case Report Series	Martha Mozartha, Revina Daniella	UG Case Report	Online	11.15 am – 11.25 am

DAY 3 - 28th OCT 2022 MORNING SESSION

ORAL - ORIGINAL RESEARCH

Sl. No	Room allotted	ID	Title	Pre-senter	Cate-gory	Of- fline/ Online	Time Sched- ule
1	2 (ICE ROOM)	22U21	In vitro cytotoxicity study of stingless bee propolis towards orl-48 and hgf; ai-powered conceptual bee-hive model	Syahmirul bin Sahru-zaman	UG Original Research	Offline	10.15 am – 10.25 am
2		22U22	Acou@play app as a musical relaxing tool in dental man-agement: what they say?	Rahmah Binti Saifulz-aman	UG Original Research	Offline	10.25 am – 10.35 am
3		22P41	Morphometric analysis of mental foramen using CBCT. A retrospective hospi-tal-based study	Dr. Ashna biju	PG Original research	Offline	10.35 am – 10.45 am
4		22P42	Thickness of the schnei-derian membrane and its correlation with age and gen-der: a cone beam computed tomography study	Dr. Jerry Rose	PG Original research	Offline	10.45 am – 10.55 am
5		22P44	A survey on the knowledge and perception of AI among dental graduates – a pilot study	Dr. Gayathri	PG Original research	Offline	10.55 am – 11.05 am
6		22U27	Deep learning-based detec-tion of impacted mandibular third molars and classifica-tion of extraction difficulties	Ta Thanh Dong	UG Original research	Online	11.05 am – 11.15 am
7		22P26	AI radiomics method for difference of ameloblastoma and odontogenic cyst	Gending Nie	PG Original research	Online	11.15 am – 11.25 am

DAY 3 - 28th OCT 2022 MORNING SESSION

ORAL - ORIGINAL RESEARCH

Sl. No	Room allotted	ID	Title	Present-er	Cate-gory	Of- fline/ Online	Time Sched- ule
1	3 (BOARD ROOM)	22F33	Comparative Analysis of Two Bioactive Sealers and Ah Plus on The Microhardness and Fracture Resistance of Radicular Dentin at Four Time Intervals – A One Year In Vitro Study	Dr.Sarin. korothe	Faculty Original research	Offline	10.15 am – 10.25 am
2		22P36	Herbal bonding-going natural	Dr.Puneeth Kumar R	PG Original research	Offline	10.25 am – 10.35 am
3		22P40	The effect of pandemic lock-down on tobacco epidemic: A web-based study”	Dr. Anudarsh	PG Original research	Offline	10.35 am – 10.45 am
4		22U45	Dental Students Perceptions toward hybrid Learning in Post Pandemic Period	N. Chihaan	UG Original research	Offline	10.45 am – 10.55 am
5		22F23	Effectiveness of asynchronous vs synchronous online histology learning in covid-19 era among dental students.	Azizah Ahmad Fauzi	Faculty Original research	Online	10.55 am – 11.05 am
6		22F28	Evaluation of the preauricular transmassetric anterior parotid approach in the open reduction and internal fixation of condylar fractures	Dr.Shreyas Orvakonde	Faculty Original research	Online	11.05 am – 11.15 am
7		22U32	Application of Deep Learning model to detect and diagnose facial stress	Nguyen Quoc Hoan	UG Original research	Online	11.15 am – 11.25 am
8		22F46	Study of fixed functional orthopedic magnetic appliance in class III Malocclusion deformity during growing period	GUO YANG	Faculty Original Reasearch	Online	11:25 am- 11:30 am

Poster presentation schedule

DAY 2 - 27th OCT 2022 AFTERNOON SESSION POSTER – REVIEW

Sl. No	Room allotted	ID	Title	Presenter	Cate-gory	On-line/ Offline	Time Schedule
1	1 (AV ROOM)	16U09	Ligature-induced periodontitis in rats and mice: a systematic review on therapeutic targets.	Mhd Zukhi A	UG Review	Offline	2.00 – 2.10 pm
2		16F05	The Trend of Artificial Intelligence Publications in Dentistry	Pairin Tonput	Faculty Review	Offline	2.10 – 2.20 pm
3		16P22	INVICISION: The esthetic accelerator	Dr. Sreedevi	PG Rview	Offline	2:20 – 2:30 pm
4		16P21	Digital Occlusal Analysis: A review on Virtualizing the concept of conventional occlusal calibration	Dr. Kiran Akshaya	PG Review	Online	2.30 – 2.40 pm
5		16P20	Navigation in implant placement – static or dynamic?	Dr. Rashmi CV	PG Review	Online	2.40 – 2.50 pm
6		16F23	Dentifrobots : a fact or a fiction	Dr. Reshmi	Faculty Review	Offline	2:50- 3:00 pm
7		16F18	Salivaomics-the future of diagnostics	Dr. Neetu Sinha	Faculty Review	Online	3.00 – 3.10 pm
8		16P12	Clinical evidence for professionally applied fluoride therapy on caries management in older adults	Dr Alice Kit Ying Chan	PG Review		3.10 – 3.20 pm

DAY 2 - 27th OCT 2022 AFTERNOON SESSION POSTER - ORIGINAL RESEARCH

Sl. No	Room allotted	ID	Title	Present-er	Catego-ry	On-line/Offline	Time Schedule
1	2 (ICE ROOM)	16F01	Effects of ethanolic extract from mulberry on biofilm of Streptococcus mutans using Confocal laser scanning microscopy	Kemthong Mitrakul	Faculty Original Research	Offline	2.00 pm – 2.10 pm
2		16F02	Cytotoxicity of Newly formulated Chlorhexidine mouthwash against Mouse Fibroblasts	Peerapong Tua-ngam	Faculty Original Research	Offline	2.10 pm – 2.20 pm
3		16F03	Antimicrobial action Newly formulated Chlorhexidine mouthwash against Oral pathogens	Rattiporn Kaypetch	Faculty Original Research	Offline	2.20 pm – 2.30 pm
4		16F04	Colour deposits on acrylic denture bases caused by different types of tea beverages	Pan Soon-sawad	Faculty Original Research	Online	2.30 pm – 2.40 pm

DAY 3 - 28th OCT 2022 AFTERNOON SESSION POSTER - CASE REPORT

Sl. No	Room allotted	ID	Title	Presenter	Cate-gory	Online/Offline	Time Schedule
1	1 (AV ROOM)	16P13	Digital Technology-aided Fixed Full-mouth Implant-supported Rehabilitations.	Zhu Qiuyan	PG Case report	Online	1.30 pm – 1.40 pm
2		16P14	Implant Placement in Alveolar Septum Guided by Dynamic Navigatio	Daomin Wu	PG Case report	Online	1.40 pm – 1.50 pm
3		16F15	Digital image-guided surgical system in the removal of foreign body from the maxillofacial region	Wen Ma, Yanhua Xu, Ming Li	Faculty Case report	Online	1.50 pm – 2.00 pm

DAY 3 - 28th OCT 2022 AFTERNOON SESSION POSTER - ORIGINAL RESEARCH

Sl. No	Room allotted	ID	Title	Pre-senter	Cate-gory	On-line/ Offline	Time Schedule
1	2 ICE ROOM	16U10	Self-reported prevalence of recurrent aphthous stomatitis among uim dental students	Muhammad Aniq Hakim Bin Omar	UG Original research	Offline	1.40 pm – 1.50 pm
2		16P11	Effects of a 445 nm diode laser and silver diamine fluoride in preventing enamel demineralisation and inhibiting cariogenic bacteria	Vicky Wen-qing Xue	PG Original research		1.50 pm – 2.00 pm
3		16P08	Application of fluorescence lasers to evaluate the efficacy of arresting caries with silver diamine fluoride	Bui Huu Tuan	PG Original research	Offline	1.50 pm – 2.00 pm
4		16P16	A clinical study on the effect of the new adhesive orthodontic gate auxiliary appliance	Yang Luyao	PG Original research	Online	2.10 pm – 2.20 pm
5		16P17	Molar intrusion by the fixed occlusal pad with miniscrew on indirect anchorage appliance	Liu Jiang-shan	PG Original research	Online	2.20 pm – 2.30 pm
6		16P19	Imaging omics in the diagnostic study of TMJOA	Shiwen Ruan	PG Original research	Online	2.30 pm – 2.40 pm

TABLE CLINIC PRESENTATION

IDCMR-TCP1

BIOENGINEERING IN DENTAL PRACTICE

Sampreetha Somashekar, Treesa Mary Joseph, Heena, T P Chandru

ABSTRACT

Dentistry is a major branch of medicine. It deals with the study and the diagnosis, treatment, and prevention of diseases of the oral cavity, adjacent structures and tissues. Biomedical engineering is an interdisciplinary branch of engineering science that deals with the application of engineering principles in the field of biology and medicine for the betterment of health. Biomedical engineering is a developing field that includes engineering principles in the field of biomedicine for diagnosis, treatment as well as preventive procedures. Thus, research in coordination & amalgamation can help biomedical engineers to contribute to dentistry through research, discovery, and advancements in dental practice. The introductions of new technologies provide new and advanced treatment options than the usual practices. This table clinic enumerates the utility of biomedical engineering in various dental procedures and the need for research in this field.

IDCMR-TCP2

MISSION, BRIDGING SMILE

Faheem Mohamed Arif ¹, E R Deepak ¹, B Goutham ²

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ABSTRACT

Cleft lip and palate is the most common congenital craniofacial anomaly. Rehabilitation of CLP requires a team approach. Alveolar and nasal reconstruction is a challenge for reconstructive surgeon. The presurgical naso alveolar molding (PNAM) technique, is a noble presurgical infant orthopaedic approach. PNA reduces the severity of the initial cleft alveolar and nasal deformity. Thus, it enables the surgeon and the patient to enjoy the benefits associated with repair of a cleft deformity. To reduce the width of the cleft gap, Close the intraoral alveolar segment. Normalize the alveolar arch form, Improve the morphology of nose. Impressions were taken during the first visit and on the same day lip tape therapy was started. Next visit the PSIO appliance was delivered to approximate the cleft. When the cleft gap has been reduced to 4 mm a J- hook modification was given till the time of cleft lip repair surgery. Surgical repair of the cleft lip was performed. On alveolar segments - Reduction of severity of cleft without maxillary arch constriction. On lips Nonsurgical columella lengthening. On nose - Reduction of nasal width, Improve nasal tip projection & nostril shape. One of the present-day controversies in orthodontics is regarding the efficacy of PNA. Through this table clinic we will be discussing the successful appliance design, modifications, biomechanical principles of naso alveolar molding therapy, possible complications and the best way to deliver the appliance with case series. With proper training and clinical skills, this treatment procedure has demonstrated benefits to the cleft patient as well as to the surgeon performing the primary repair.



IDCMR-TCP3

AMPLIFY YOUR SMILE STUDENT

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ABSTRACT

The rapid maxillary expansion is a procedure that utilizes heavy forces to correct transverse maxillary arch discrepancies by opening midpalatal suture and movement of maxillary shelves away from each other by means of fixed orthodontic appliances, during growth. It is a skeletal type of expansion. The expansion devices may be bonded for example acrylic splint cast, cast cap splint, or banded like Isaacson, Biederman, Hyrax, Derichsweiler, Hass. To demonstrate the effects of RME on the maxilla, to demonstrate the effects of RME on mid palatal suture, to apply this knowledge upon patient requiring RIME procedure. A model of maxillary arch was made using plaster of paris and the expansion appliance was fabricated using car jack. Opening and closing of carjack represents the opening of mid palatal suture when expansion screw is placed. The success of the RME treatment is dependent on careful appliance design and knowledge of the appliance and anatomy for the successful splitting of the midpalatal suture.

IDCMR-TCP4

THE THREE MUSKETEERS OF ORTHO

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ABSTRACT

Orthodontic mechanotherapy is mainly aimed at fostering tooth movement by inducing remodeling and adaptive changes in dental and paradental tissues. Rapid advances made in biological fields have helped as to understand the mechanism of orthodontic tooth movement. The growing body of knowledge on the response of the teeth to the mechanical loads should illuminate useful paths in clinical orthodontics as well as in identifying and discarding harmful methods of mechanotherapy. Understanding basic principles of mechanics is essential to evaluate the force system generated by orthodontic appliance. These principles are found within a branch of engineering called mechanics. To have a clear understanding of the mechanical principles of tooth movement, to understand the type of force system required to produce optimum results. A biological environment of tooth and bone are made with cardboard and wood. The tooth movements are replicated with the help of a battery driven motor showing different types of orthodontic tooth movement like tipping, bodily movement and torquing. Depending upon the ratio of the moment and the counteracting force. Four types of different tooth movements are possible: Uncontrolled tipping (5:1). Controlled tipping (7:1). bodily movement (10:1) and torquing (12:1). The net moment and net force on tooth with reference to its centre of resistance determines the centre of rotation. Since most forces are applied at bracket it is necessary to compute equivalent force system at centre of resistance to predict tooth movement. A thorough knowledge of several fundamental biological and mechanical concepts is necessary for a complete understanding of clinical orthodontics.

ORAL POSTER PRESENTATION

IDCMR-22P01

THE THREE MUSKETEERS OF ORTHO DENTAL MANAGEMENT OF A CHILD WITH RUBINSTEIN-TAYBI SYNDROME: A CASE REPORT

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ABSTRACT

Background: Rubinstein-Taybi syndrome is a rare genetic disorder characterized by physical abnormalities, distinctive facial features with varying degrees of intellectual disability. **Case report:** A 28-month-old boy who has been diagnosed with Rubinstein-Taybi Syndrome accompanied by parents with a complaint of toothache at upper anterior teeth. Extraoral and intraoral manifestation showed short neck, brachydactyly, broad hallux phalanx, convex nasal bridge, down-slanted palpebral fissures, and severe dental caries at upper anterior teeth. This patient also had delayed development, hypertrophy of adenoid and severe obstructive sleep apnea problems. Generally, patients with Rubinstein-Taybi Syndrome who has un-cooperative behaviour usually have a dental treatment under general anesthesia. Nevertheless, this case required urgent dental treatment due to his chief complaint and difficulties of intubation and airway management. Dental treatment was done by a non-pharmacological dental management under the consultation of a paediatrician and anaesthesiologists. This case illustrated a successful non-pharmacological dental management with additional awareness, vital sign monitoring and emergency management preparation under the consultation and collaboration of a multidisciplinary care team. The dental treatment plan including behavior management of this patient are discussed in this case report. The recognition of this syndrome and acknowledgement of its cautions are crucial for providing appropriate dental treatment for patient with Rubinstein-Taybi syndrome.

Keywords: Rubinstein-Taybi syndrome, Dental management, Monitoring

IDCMR-22P02

ELLIS-VAN CREVELD SYNDROME – A RARE DISORDER WITH CHARACTERISTIC CLINICAL AND ORAL MANIFESTATIONS: A CASE REPORT

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ABSTRACT

Background: Ellis-van Creveld syndrome (EVC) is a rare autosomal recessive disorder which caused by mutations in the EVC or EVC2 gene. The characteristic features are bilateral postaxial polydactyly, chondroectodermal dysplasia, congenital heart defects, and hypoplastic nails and teeth. Moreover, the oral

manifestations of EVC can include both soft tissues and teeth. **Case Report:** A 3 years 3 months old Thai girl presented with early childhood caries and congenital missing on lower anterior teeth. Extraoral examination found that she has short limbs, hypoplastic fingernail, bilateral postaxial polydactyly of both hands and malformation of the leg bones. Medical consultation revealed that no congenital heart problem and planned to surgical removal of postaxial polydactyly of hands. For malformation of leg bones, the orthopedic doctor gave her an advice to receive physical therapy. The presence of oral manifestations in this patient are: multiple hyperplastic frenula, abnormally shaped and microdontic teeth, and congenitally missing on upper lateral deciduous incisors and lower deciduous incisors. The panoramic radiograph revealed multiple missing of permanent teeth, so the patient requires multidisciplinary dental treatment to restore function and promote her quality of life. **Discussion:** Although this patient doesn't have any congenital heart disease; the studies reported it occurs in about 50–60% of EVC cases. The dentist should realize that medical consultation is important. Moreover, EVC needs proper diagnosis and multidisciplinary management both in medical and dental aspects. **Conclusion:** This EVC case received completed restorative dental treatment and prosthetic has planned for replacing multiple missing in permanent teeth in the future. In addition, the patient will receive regular dental checkups until permanent dentition and will be re-evaluated for the proper definitive treatment.

Keywords: Ellis-van Creveld syndrome, chondroectodermal dysplasia, congenital heart problem, missing teeth

IDCMR-22P04

CLINICAL MANAGEMENT OF CHILDREN WITH RISK OF INFECTIVE ENDOCARDITIS IN DENTAL PRACTICE

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ABSTRACT

Background: Several cardiac birth defects pose the patient at risk of infective endocarditis (IE), rare but could be fatal condition. The risk may continue post-surgical correction. Tooth infection and dental procedures invading mucosa could be sources of bacteremia, although low incidence. American Heart Association recommendation does not mean to replace clinical judgement. **Case report:** 4.4 years old TOF Thai boy presented to Mahidol university dental hospital with status one-month post total correction with VSD enlargement and pulmonary valve-sparing with non-Tissue-Autologous-Dacron patch, leaving him with some risk of IE. Review of history revealed that patient had cyanotic TOF and hypoxic spell and severe early childhood caries (sECC). Dental care started in pre-operative phase preparing for cardiac surgery in a tertiary care hospital under risk of spell and high risk of BE where he had lost all pulpal exposure teeth. Post cardiac surgery, sECC persisted. SDF treatment was selected for non-pulpal involved teeth and antibiotic prophylaxis could be avoided. The patient was lost for follow up and had several molars extracted elsewhere. Attempt was made to lower risk of caries with no success. Tooth with pulpitis was saved by pulpectomy and stainless-steel crown while the abscess one was scarified under local anesthesia, rubber dam and antibiotic. His oral hygiene, diet habit and dental behavior was finally improved when he was 6.10 years old. Caries management is major concern in this patient. Non-invasive procedures and devices should be considered to aid patient cooperation and minimize antibiotic prophylaxis need. SDF is an effective non-operative treatment. Frequent regular recall and intensive preventive program should be established. Children with congenital heart defect could be at risk of IE and needs a good oral surveillance. Physician and dentist should take a key role working with caretaker to prevent adverse consequences.

Keywords: Tetralogy of Fallot, dental management, antibiotic prophylaxis, Infective endocarditis

IDCMR-22P05

SUPERNUMERARY TEETH IN A NON-SYNDROMIC PEDIATRIC PATIENT: A CASE REPORT

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ABSTRACT

Background: The supernumerary tooth is a developmental dental anomaly affecting the number of teeth in primary and permanent dentition. Mesiodens is the most common type of supernumerary teeth, which locates at midline of upper anterior. The presence of mesiodentes can cause ectopic eruption, dilaceration, and resorption of permanent incisors. These complications affect a quality of life functionally and aesthetically. **Case report:** This case report describes a 7-year-old boy with clinical and radiographic evaluation. The intraoral examination showed a mesiodens on palatal region of malposed central upper incisors. His family members have no history of supernumerary teeth. The radiographic examinations were prescribed and found with another unerupted supernumerary tooth. The mesiodens was extracted and the surgical removal of the impacted supernumerary tooth was achieved through palatal access under general anesthesia. After surgery, the follow-up visit was obtained to monitor the potentiality of damage to adjacent structures. **Discussion:** Early detection and treatment of impacted supernumerary tooth should be performed to promote well-alignment and minimize the need for further treatment. However, the diagnostic of mesiodens can be missed on radiographs. Besides the detection of mesiodens by dental clinicians, an automatic detection on panoramic radiographs using artificial intelligence has been proposed to help clinicians diagnose mesiodens. Many models were developed for higher accuracy, sensitivity, and specificity. However, the further studies are necessary to enhance external validity and to improve the performance of the model. **Conclusion:** An early recognition by clinical and radiographic examination leads to an optimal intervention, which prevents orthodontic and critical pathologic complications.

Keywords: Mesiodens, Supernumerary tooth, Panoramic radiogra

IDCMR-22P07

SEVERE TRAUMATIC DENTAL INJURIES IN PRIMARY INCISORS: A CASE REPORT

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ABSTRACT

Background: Dental trauma is common in children under the age of 6 and is mostly related to poor motor coordination and an inability to assess risks. The inability of children to cooperate in stressful situations make management challenging, and it becomes more challenging when multiple teeth are involved. **Case Report:** A 3-year-old Thai child was referred to Mahidol Dental Hospital by a clinic after her tooth 62 was extracted due to significant extrusion from an accidental fall. The clinical and radiographic exams showed that teeth 51 and 61 had undergone subluxation and intrusion, respectively. The management approach followed the guidelines of the

International Association of Dental Traumatology 2020. At one-week, one-month, and three-month follow-ups, it was revealed that 61 was exhibiting a spontaneous re-eruption and realignment as well as a grey staining in 51 that was gradually diminishing. A sign of external root resorption was observed at three-month follow-up. This study showed that simultaneous occurrence of intrusion and extrusion can happen even it is a rare condition as the direction of forces act differently. As the severe extrusion of 62 interfered with the child's function and might cause the child to be at risk for aspiration, extraction was preferred over repositioning by itself. The recent guidelines no longer recommend extraction of intruded primary teeth irrespective of the direction of root apex. The chance of spontaneous re-eruption has been reported and was also confirmed by this case which showed position improvement within 1 week. However, intrusions are commonly followed by pulp necrosis or root resorption and a risk of permanent tooth malformation. Parents should be encouraged for regular follow-up. Management of dental injuries in primary teeth depends on the degree of severity. An intruded incisor has the potential to spontaneously reposition and needs to be continuously monitored for any unfavourable outcomes.

Keywords: Intrusion, Luxation, Dental trauma, Dental injuries, Primary teeth, Young children

IDCMR-22P08

MULTIDISCIPLINARY APPROACH FOR ORBITAL RHABDOMYOSARCOMA IN A PEDIATRIC PATIENT: A CASE REPORT

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ABSTRACT

Background: Rhabdomyosarcoma (RMS), a tumor of skeletal muscle origin, is a highly malignant tumor with extensive local invasions, painless, infiltrative mass that may grow rapidly in the head and neck region. Multimodal therapy incorporating surgery, dose-intensive combination chemotherapy, and radiation therapy improves its prognosis and survival rate with some consequences. The consequences, other than psychologic trauma, include abnormal development, disability, and deformity of orofacial region that can compromise patient's quality of life. Multidisciplinary dental team must involve and collaborate for a comprehensive treatment. **Case report:** A 9-year-old Thai boy was referred for dental evaluation with uncooperative, fearful behavior. History of rhabdomyosarcoma at left orbital was reviewed. The treatment procedures included orbital exenteration, chemotherapy and radiation since aged 3. The treatment left patient with facial asymmetry due to maxillary constriction with wound dressing at left orbital. Intraoral and radiographic examination revealed multiple carious lesions with heavy plaque, arrested of tooth development and odontoma. Multidisciplinary treatment provided according to patient's needs involved pediatric dentist, maxillofacial prosthodontist, maxillofacial surgeon and orthodontist. Oral hygiene improvement and behavior shaping was the first concerns to aid effective delivery of restoration, orbital prosthesis, orthodontic treatment and follow up for odontoma and obstructive sleep apnea. Digital technology intraoral scanner became very helpful to comfort the patient and transfer his data. At three months follow-up, all restorations were intact in good conditions with patient and parent satisfaction. The maintenance phases are continuing care in order to achieve long-term stability of oral health. Collaboration of multidisciplinary team contributed successful comprehensive care for patient. However, advantages/disadvantages of procedures, treatment expense, patient co-operation and parent desires should be considered carefully. Despite life threatening diseases was halted, patient-life after treatments is still a serious issue. Collaboration of multidisciplinary team for comprehensive treatment is required to restore patient's quality of patient life.

Keywords: Orbital rhabdomyosarcoma, Pediatric, Dental treatment

IDCMR-22P34

CORRECTION OF UNILATERAL CLEFT LIP, PALATE AND ALVEOLUS THROUGH PRESURGICAL NASOALVEOLAR MOLDING ASSISTED PRIMARY RECONSTRUCTION IN A NEWBORN CHILD USING PSIO-J HOOK APPLIANCE- A CASE REPORT

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ABSTRACT

Background: Cleft of Lip, Palate, and Alveolus is most commonly seen congenital deformities at the time of birth. It may lead to psychological problems, Dental problems, and esthetic problems if left untreated. Hence the management of cleft patients is quite challenging and controversial which involves a multidisciplinary approach including members of various specialties. This paper describes presurgical nasoalveolar molding (PNAM) therapy in a newborn infant using a PSIO-J hook appliance. **Methods:** Impressions were taken during the first visit and on the same day lip tape therapy (lip taping) was started using 3M Steri- Strip. During the next visit the PSIO appliance was delivered to approximate the cleft alveolus. When the cleft gap has been reduced to approximately 4 mm a J- hook modification was given till the time of cleft lip repair surgery. Surgical repair of the cleft lip was performed. **Results:** PNAM using PSIO-J hook appliance gave a promising result in reducing the extent of the cleft deformity of lip, palate, alveolus and improving the nasal esthetics. There was also a significant reduction in the alveolar defect (13mm to 4mm) when compared from pre-NAM to post NAM. **Conclusion:** The PNAM assisted primary reconstruction using PSIO-J hook appliance helped in overall improvement of the nasolabial complex in cleft cases, Esthetics was improved, the extent of surgery and number of surgical procedures were reduced.

Keywords: Unilateral cleft lip & palate, Pre surgical nasoalveolar moulding, Pre surgical infant orthopedics

IDCMR-22P35

ENMASSE DISTALIZATION OF MAXILLARY AND MANDIBULAR ARCH USING INFRA ZYGOMATIC CREST AND BUCCAL SHELF IMPLANTS

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ABSTRACT

Background: A 14-year-old female patient reported to department of orthodontics with a chief complaint of forwardly placed upper and lower front teeth. **Case Report:** Extra oral examination revealed Incompetent Lips, Convex Profile and Obtuse Nasolabial angle. On clinical examination there was a highly placed Maxillary Left

Canine with mild crowding in both Upper and Lower arches. Cephalometric evaluation showed Class I Skeletal pattern with Retrognathic Maxilla and Mandible. It was decided to treat the patient with extraction of four first premolars. Patient was reluctant to undergo premolar extraction. So it was decided to extract all the third molars and utilize the third molar space for Enmasse distalization of Upper and Lower arches. After initial leveling and aligning and on reaching 19 X 25 SS arch wire Infra Zygomatic Crest (IZC) and Buccal Shelf implants (Bioray) of size 2 x12mm were placed. Distalization was started using 12mm Closed Coil spring engaged from the implant to the post in the arch wire. The closed coil spring was activated every 4 weeks once. After 5 months of distalization there was marked change in the patients profile because of 5mm Enmasse distalization in the upper and lower arches. **Results:** Following debonding Enmasse distalization of 5mm was achieved in Upper and Lower arches with Class I Molar relation being maintained. There was marked improvement in the patients profile with lips becoming Competent. **Conclusion:** IZC and Buccal Shelf Implants are a viable option for Enmasse distalization in patients who are not willing for PREMOLAR extraction

Keywords: Buccal Shelf Implant, IZC, Enmasse distalization

IDCMR-22U11

PATIENT SAFETY EVENTS IN A DIAGNOSTIC AND EMERGENCY CARE CLINIC, MAHIDOL DENTAL HOSPITAL, THAILAND

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ABSTRACT

Introduction/Background: Patient safety in oral healthcare is important but seldom studied, especially in Thailand. **Aims & objectives:** The purpose of this research is to identify and analyze patient safety incidents in the Diagnostic and Emergency Care clinic, Dental Hospital, Mahidol University Faculty of Dentistry. **Methodology and methods:** A total of 1,711 patients receiving any dental treatment at the clinic were selected from 5,843 cases from January 2018 to December 2020 by using systematic random sampling method. For each patient, the details of treatment records within the Diagnostic and Emergency Care clinic were reviewed to identify patient safety events. From risk incident reports, only details of the events, and preliminary management were gathered. **Results:** Cases comprised 1,650 patient records and 61 risk incident reports in which 420 patient safety events were identified. The events were classified into three operational stages, and their severity was graded based on the dental adverse event severity tree. Pre-operative events occurred in 72.71% of cases with severity ranging from C to D, except RCT tooth fractures requiring extraction which had the severity of G2. Intra-operative and post-operative events were identified in 7.94% and 19.35% of all incidents, with severity ranging from E1 to E2 and B to D, respectively. More than 50% of the identified events can highly impact on the prosthodontic clinic. These events were associated with incomplete treatment plans in relation to delayed post and crown treatment, necessitating endodontic care. Post and crown treatment delayed in RCT tooth by 3-5 years may strongly correlate with crown fracture. **Conclusion:** The majority of incidents were low risk, and high-risk incidents were determined to be rare and preventable. Understanding these events can aid in reducing the likelihood of poor outcomes, lowering the risk of injury and improving patient safety.

Keywords: Patient safety, Adverse events, Dentistry, Quality of dental care, Severity

IDCMR-22F12

MACROLIDE NANOFIBERS SCAFFOLDS: THE PILOT EXPERIENCE

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ABSTRACT

Background: Pulp necrosis, which can result in tooth loss if left untreated, is most frequently brought on by dental trauma and cavities. The mechanical strength and rate of disintegration of nanofiber scaffolds varied, showing their potential for tissue repair and regeneration. Biocompatible and biodegradable gelatin methacryloyl (GelMA) hydrogel and nanofibers are photopolymerizable. **Aims:** This preliminary study describes the synthesis, material characterization, and antibacterial capability of azithromycin scaffolds for regenerative endodontic applications. **Methods:** AZ at three distinct amounts (up to 15%, w/v) was mixed with solubilized gelatin methacryloyl (GelMa, 10% w/v) and the photoinitiator to obtain the following fibers: GelMa+5%AZ, GelMa+10%AZ, and GelMa+15%AZ. Pure GelMa (i.e., without AZ) fibers were prepared as a control. Fiber morphology and diameter were evaluated using scanning electron microscopy (SEM). Fourier-transform infrared spectroscopy (FTIR) was used to confirm AZ incorporation. Mechanical properties and degradation profiles were also studied. For all groups, a linked nanofibrous network of pores was seen. **Results:** The fiber diameter of the scaffolds containing 5 and 15 percent AZ ranged between $0.664 \pm 0.179 \mu\text{m}$ and $0.826 \pm 0.345 \mu\text{m}$ and was significantly smaller ($P < 0.05$) than the fiber diameter of the scaffolds containing 15 percent GelMa with LAP ($1.083 \pm 0.405 \mu\text{m}$). All the other groups, including those with 5 percent AZ, 10 percent AZ, and 15 percent AZ, had considerably ($P < 0.05$) fewer effects than the control. The degradation profile in vitro followed the same pattern (depending on AZ concentration), with GelMA+10% AZ and GelMA+15% AZ fibers showing almost 30% mass loss after two weeks. Electrospinning was used to successfully create AZ-loaded photocrosslinkable GelMA fibers with acceptable mechanical and degrading properties. **Conclusion:** Significant antibacterial activity was seen in GelMA-based fibers that were 15 percent AZ loaded without impairing the fibers' general biocompatibility.

Keywords: Antibacterial, Endodontics, Nanofibers, Antibiotic

IDCMR-22P19

ANALYSIS OF ORAL HEALTH WORKFORCE DISTRIBUTION FOR SCHOOL DENTAL SERVICES IN PAHANG

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ABSTRACT

Background: Workforce planning for oral healthcare services is confined to dentist-to-population ratio calculations, a widely used approach that uses population estimates to compute the number of dentists required in a population. However, it fails to include several critical factors, including the oral health need load. **Objectives:** Due to the limitations of the dentist-to-population ratio approach, workload analysis is utilized to understand oral health needs. This study examines the workforce imbalance affecting Pahang's School Dental Service (SDS) workforce distribution. **Methods:** Pahang State Health Department provided workforce and workload data for each corresponding school. To calculate and standardize the workforce size for each school, the ratio of one operator to the total number of students is used (operator-to-student ratio). All data collected was merged and transferred into the ArcGIS Pro software for geospatial analysis. Data were loaded into SPSS software for statistical analysis. **Results:** The operator-to-student ratio in Pahang is 1:470. 47 of the 10% (n=72) schools with a low operator-to-student ratio are in Kuantan. There was a significant difference in mean DMFT schools located in rural and urban areas ($p=0.02$). Schools in urban areas have a higher mean DMFT, 0.86 (SD=0.58), compared to schools in rural areas, 0.74 (SD=0.60). In terms of workload, Kuantan's urban schools have a high workload per operator burden. With fewer operators in Kuantan than in other districts, a high workload burden magnifies the workforce distribution imbalance. **Conclusion:** Compared to the rural area, there is a low operator-to-student ratio distribution in the urban area. Schools with a low operator-to-student ratio have more students to be treated per operator. The requirement for a fair distribution of the SDS workforce according to workload is apparent.

Keyword: Workforce, School Dental Service, ArcGis Pro

IDCMR-22P16

THE PERCEPTION AND UTILISATION OF DENTAL PERSONNEL IN THE DENTAL PUBLIC HEALTH SPECIALIST UNIT, ALOR SETAR, KEDAH

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ABSTRACT

Introduction: A positive finding in the National Oral Health Survey of Adults (NOHSA) 2010 that shows improvement in preventive visit utilisation has initiated the Oral Health Program to set up a preventive dental clinic managed by dental public health (DPH) specialist known as Dental Public Health Specialist Unit (DPHSU). Since its inception, no study has been done to evaluate the DPHSU's utilisation. **Objective:** This study explores dental officers' and specialist experiences and challenges in referring patients to DPHSU in Alor Setar, Kedah. **Methods:** 23 dental personnel working in government dental clinics in Alor Setar, Kedah, were interviewed face-to-face or via phone based on their preferences. Interviews were conducted using a semi-structured questionnaire and recorded digitally. The recordings were transcribed verbatim and analysed thematic using NVivo software. **Results:** Referrals to the DPHSU were from primary care, orthodontics, periodontics, and restorative dentistry. Barriers to utilising the services were due to poor understanding of the referral criteria and patients' refusal. Referrals happened because patients wanted to improve their oral health habits, and clinicians spent too much time managing their patients. **Conclusion:** There were positive changes in patients' oral health behaviour despite challenges and barriers faced in referring patients.

Keywords: Preventive dentistry, Dental public health, Preventive clinic

IDCMR-22U20

BEVERAGE SUGAR CONTENT AND ACIDITY AND ITS ASSOCIATION WITH DENTAL

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ABSTRACT

Introduction: The current trends in beverage consumption are propagating oral health risks. Sugar-dense beverages are popular with various types and flavors. In Australasia, North America, and several Western European nations, global sales of drinks containing energetic sweeteners indicate constant but high levels of consumption. Malaysians consumed 153.9g of sugar per day, which is included in the beverages, and are also the eighth largest sugar consumer in the world. Sweetness and acidity in the beverages indicate that the sugar and acid content may cause dental caries and tooth erosion, respectively. **Objectives:** This study aims to identify the erosive potential of beverages including their sugar content and association with the consumption behavior of dental students. **Materials and Method:** Beverages were purchased and prepared for pH measurement. The acidity of each beverage was identified using a pH meter and classified into its erosive potential. Sugar content was obtained from the packaging and recorded. Beverage consumption behavior was examined using a validated questionnaire. **Results:** There were 167 beverages purchased or prepared for the acidity test. We categorized the beverages into 15 categories. The pH value ranges from 2.65 to 7.85. The highest sugar content obtained from the packed beverages was energy drink, which contains 17.2g of sugar per 100ml. Seven beverages (4.2%) were classified as extremely erosive. In total, 96 beverages (57.5%) were considered as erosive whereas the rest (71 beverages, 42.5%) were not erosive. A total of 363 students responded to the consumption behaviour questionnaire and the demographic factors and behaviour including its association were described. **Conclusion:** An intervention is required from a public health perspective to regulate the consumption of sweetened and acidic beverages.

Keywords: Beverage, Consumption behaviour, Erosive potential, Sugar

IDCMR-22F18

ASSESSING THE DENTAL STUDENTS' PERSPECTIVES ABOUT ARTIFICIAL INTELLIGENCE IN DENTISTRY - A QUESTIONNAIRE STUDY

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ABSTRACT

Introduction/Background: Artificial Intelligence (AI) is considered one of the biggest breakthroughs in science and technology. The artificial intelligence (AI) has been grown exponentially in various fields. And will certainly have an impact on both young dentists and dental students. Hence, It is essential for teaching AI technology to dental students. **Aims & Objectives:** The aim of this study was to: "Assessing the dental students perspectives about artificial Intelligence in dentistry". In Maratha Mandals N.G.Halgekar institute of dental sciences. **Methodology/Materials and Methods:** A cross-sectional study was conducted using an online-based questionnaire sent to dental students. The questionnaire consisted of 22 questions and was constructed via Google Forms with the aim evaluating dental students' perspectives on the impact of AI technologies in dentistry. The questionnaire used in this study was Google Forms. Furthermore, it was developed after referring a pre-validated

questionnaire and distributed to students through social media platforms. The data collection shall be for 2 weeks. **Results:** A total of 120 students responded to the questionnaire. of these, 51.7% had basic knowledge about AI technologies, and approximately 46.2% know the application of AI in dentistry. Of these, about 47.2% of subjects obtained information about AI from social media (Facebook, Instagram). 56.9% agreed that AI will lead to major advances in dentistry. 51% of the students agreed on incorporation of AI technology in undergraduate and postgraduate dental curriculum, respectively. **Conclusion:** The current results note that most of the dental students appear to be enthusiastic about application of AI in dentistry. They believe that AI need to be incorporated in dental curriculum in the coming future.

Keywords: Artificial intelligence, Perspectives of dental students, Dentistry, AI technologies, Dental students

IDCMR-22P13

BIOLOGICAL PROPERTIES OF THE TOOTH-DERIVED BONE SUBSTITUTE AND BONE REGENERATION IN PERIODONTAL DEFECT MODELS

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ABSTRACT

Introduction: Periodontitis often leads to progressive destruction and loss of alveolar bone, the reconstruction of which remains difficult in periodontal therapy. As a novel bone graft material, tooth-derived bone substitute (TDBS) processed from extracted teeth, has been previously reported about its osteoconductivity and promising results in bone regeneration. **Objectives:** This study was to investigate the biological effects and bone regeneration properties of TDBS in vitro and in vivo using rat periodontal bone defect models. **Methodology:** Three groups of materials were used in the experiments: TDBS, TDBS treated with EDTA (TDBS-E), and allogeneic bone materials. Calcium (Ca) and phosphate (P) ions dissolutions were quantified by spectrophotometer for 7 days. The release of BMP-2 and TGF- β 1 were identified by ELISA. Human osteoblast proliferation, migration, and differentiation were detected by MTT assay, ALP, and Alizarin Red Staining (ARS), respectively. Furthermore, the osteogenic effects of TDBS on periodontal furcation bone defects were postoperatively evaluated at 8 weeks using Micro-CT and histological analysis. **Results:** The dissolution of both Ca and P ions in TDBS was increased over time. The BMP-2 released from TDBS was significantly higher than TDBS-E and other allografts, while the TGF- β 1 from both TDBS and TDBS-E groups were higher than in allografts. It appeared that the TDBS-E could induce osteoblast proliferation at the highest level in all groups. The cell migration with allografts co-culture was significantly induced compared to blank. However, all allografts demonstrated similar positive effects on osteoblast differentiation. Furthermore, all allografts could properly enhance bone regeneration in the furcation defect in the periodontal model with no statistical differences between groups. **Conclusion:** TDBS prepared chairside as autogenous bone graft demonstrated the osteo inductivity which enhanced the osteogenic biological characteristics. Therefore, TDBS prepared chairside was suggested to be an economical and biocompatible material for periodontal bone regeneration.

Keywords: Bone graft; Tooth particulate; Dental material

IDCMR-22P17

ACCURACY OF MACHINE LEARNING MODEL IN THE DETECTION AND CLASSIFICATION OF APICAL LESIONS IN PERIAPICAL RADIOGRAPHS

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ABSTRACT

Background: Apical periodontitis (AP) is an inflammatory oral disease that usually develops as a consequence of the vital pulp being exposed to various oral bacteria as a result of dental caries or dental trauma. AP can lead to chronic fistula, mobility, and cyst formation. In periapical radiographs, AP is present as a radiolucency around the tooth apex. Different anatomy and multi-rooted teeth can affect the diagnosis of apical lesion on radiograph. **Aims:** In this study, we propose a new Deep Learning Model to aid the clinician in detection of apical lesions and classification of apical lesions according to periapical index. **Results:** 2700 periapical radiographs were collected from HaNoi Medical University to train the learning model. Resnet50-FasterRCNN algorithm is used in the training phase. 270 periapical images are used to test the model. Proposed model is evaluated by Sensitivity, Specificity, Accuracy indices. The values of these indices are 89.5%, 94.9 % and 92.6%, respectively. The sensitivity of P3, P4, P5 detection are 80 %, 86.1 % and 75%, respectively. **Conclusion:** Diagnosis model proposed in this paper performs effectively on periapical films to predict and classify periapical lesions

Keywords: Apical lesions, Deep learning, Detection, Classification

IDCMR-22P06

SELF-ASSEMBLING PEPTIDE P11-4: A BIOMIMETIC AGENT

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ABSTRACT

Background: Dental caries is one of the most prevalent diseases worldwide. It is characterized by demineralization, which frequently leads to cavitation. It is known that dental caries is a dynamic process. This process can be pushed to either remineralization or demineralization of tooth mineral. Modern dentistry supports a minimal intervention approach that focuses on arrest and reverse incipient lesions. Fluoride is the most well-known and usually used as remineralizing agent. Recently, new remineralizing agents were introduced. Self-assembling peptide P11-4 was designed as one of the biomimetic remineralization agents. **Aims & objectives:** This study aimed to investigate the current scientific data and efficiency of self-assembling P11-4. **Materials and Methods:** The electronic databases including PubMed, and Google Scholar were searched on articles published between January 2010 and January 2022. **Results:** Self-assembling peptide P11-4 (Ace-Gln-Gln-Arg-Phe-Glu-Trp-Glu-Phe-Glu-Gln-Gln- NH₂) regenerates enamel based on the principle that monomers of this peptide assemble in a three- dimensional network which simulates the enamel matrix. New hydroxylapatite crystals form on this matrix with the aid of calcium phosphate from the saliva, thus, enabling regeneration. This will be happened in specific environmental triggers. At pH > 7.4 and low ionic strength, P11-4 forms a monomeric. When the pH of the solution is decreased below 7.4, P11-4 spontaneously self- assembles to produce 3D gels form a

scaffold. This process comprises formation of beta-sheet nanotapes, ribbons, fibrils and fiber. The scaffold displays a strong chemical bonding with the tooth surface. It might mimic the function of enamel matrix proteins and aid as a template for HAP nucleation and deposition within the lesion. Laboratory tests found that self-assembling peptide P11-4 can remineralize higher efficiency compared to fluoride in non-pH changed situations. This agent can gain better outcomes when combined with other agents. **Conclusion:** This review showed that self-assembling peptide P11-4 has the ability to remineralize enamel.

Keywords: Remineralization, Self-assembling peptide P11-4, Biomimetic

IDCMR-22P30

AI – ASSISTED LOCAL ANAESTHESIA IN DENTISTRY

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ABSTRACT

Artificial intelligence (AI) is a tool that must be deployed in the right situation to solve an applicable problem. As the development and application of AI technologies continues to grow, it is crucial for dentists to understand what these technologies are and how they can be leveraged to deliver safer, more efficient, cost-effective care. Aims: The predominant focus is to investigate potential ways that AI can benefit the clinical practice not through the replacement of the clinician but through augmentation of the workflow, decision-making, and other elements of clinical care. Even the most experienced practitioner can benefit from this. Applications of AI include the creation of advanced clinical decision support tools and ultimately the development of robots that optimise needle tip accuracy and local anaesthetic injection. Intraoral administration of local anaesthetics to obtund nerve conduction is the most widely used method for controlling pain during dental procedures. The most commonly anesthetized nerves in dentistry are branches or nerve trunks associated with the maxillary and mandibular divisions of the trigeminal nerve. However, other nerves may be inadvertently affected by intraoral local anesthesia injections, resulting in anesthetic complications of structures far from the oral cavity. One such distant complication is of the eye. Symptoms of this unexpected complication have been described as blurring of vision, amaurosis, Horner-like manifestations involving ptosis, mydriasis, diplopia and worst-case permanent vision loss. Ophthalmologic complications are underreported and sometimes misinterpreted. The knowledge of these conditions and their potential cause should alert the dentist to the importance of appropriate injection techniques and an understanding of management protocol. Thus, newer technology of LA technique claim precision in LA procedures and may reduce the complications. Aim of this presentation to discuss the potential ocular complications following intraoral injection in dentistry and make recommendations that will increase the precision and minimize adverse outcomes.

IDCMR-22P31

ENDODONTICS: FROM DARK TO DAWN SACRED-O-BAG APPROACH (A FUTURISTIC APPROACH IN PEDIATRIC ENDODONTICS)

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ABSTRACT

The major concern in the field of paediatric dentistry is the loss of primary teeth and the principal goal in paediatric dentistry is to retain the primary teeth in the oral cavity until its physiological exfoliation to preserve the arch integrity. The future of endodontics is at the knee of the exponential curve of change. Endodontic infection has polymicrobial nature, with obligate anaerobic bacteria conspicuously dominating the microbiota related to intraradicular and extraradicular infections & organisms involved in persistent infection and endodontic therapy is advocated which is the treatment procedure that is designed to eliminate such pathogenic organisms and maintain the health of all or part of the pulp when pulp is diseased or injured, thereby preserving the tooth that would have been otherwise extracted. Preservation of teeth by endodontic therapy has gained a lot of popularity because of complete understanding of endodontic pathology and the ability to combat the same. The classic endodontic triad of disinfection, preparation and obturation currently remains the proven protocol for long term endodontic success. The futuristic approach for the modern paediatric endodontics involves the introduction of newer methods and materials. Therefore, this article aims at providing information regarding the newer approach and materials in paediatric endodontics, right from selection criteria based on diagnosis using Artificial Intelligence for the proper case selection which will be subjected to endodontic treatment, and access opening using muncie discovery burs which helps to uncover hidden canals, calcified canals, separated instruments, isthmus troughing, cement-line dissection and deep access caries, after which cleaning and shaping is carried out by KEDO S file system which is the exclusive paediatric rotary system which is considered to be the evolution in the field of paediatric endodontics as the morphology of primary teeth greatly differs from permanent teeth. The radiographic evaluation using three-dimensional imaging system has made the complex craniofacial structures more accessible. From the simple intraoral periapical radiographs to digital radiographs has not only made the process simpler and faster but also made image storage, manipulation and retrieval easier. Then the process of disinfection is aimed towards improving the fluid dynamic during canal irrigation and the need to develop newer antimicrobials which demonstrate potent antibiofilm affect over sodium hypochlorite following which obturation is carried out and bioceramics are amongst the recently introduced materials which have changed the face of endodontics and Bio *C Pulpecto* is the bio ceramic root filling material for primary teeth. The article also mentions about further advancements such as about biodentin, apexification using PRF and gene therapy. The only constant is change and future belongs to those who learn from the past and adapt to change in the future. The eye-opening technologies have brought endodontics out of the dark, giving dentists a new level of competency, consistency and confidence.

Keywords: Artificial intelligence, Future paediatric endodontics, Paediatric rotary system, disinfection, Obturation, Bioceramics, PRF, Gene therapy

IDCMR-22P43

AI IN DENTISTRY- USING A DIGITAL PLATFORM TO CONSULT REDUCES IN PROCURING PREVENTIVE CARE GEAR- A REVIEW

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ABSTRACT

Introduction: Observing the shortcomings during the pandemic, tele dentistry using artificial intelligence as the helping tool is introduced for mass oral health screening and oral health care at the comfort of home. **Objectives:** To reduce the screening time. To go digital inadvertently reduce the exposure to viruses by means to screen a patient's mouth. To provide instant care anytime and anywhere. **Materials and Methods:** 1. A smart phone, 2. Well-Lighted room, 3. Internet connection, the user is instructed to take photos from their respective phones at certain angles. The photos are then uploaded on the software and analysed. On the basis of the report generated, further assistance is provided. **Results:** A software (A.I MODEL) detected oral health conditions like caries, stains, calculus, recession, gingivitis, oral mucosa changes (inflammation, pigmentation, ulcers). **Conclusion:** Artificial intelligence can certainly be tool in making significant progress in delivering better health care to the patient but in no way can replace human knowledge, skills and power of judgement.

Keywords: Artificial intelligence, Tele dentistry, Mass screening

IDCMR-22F47

ORAL CANCER STEM CELLS: "MIRAGE" OR "REALITY"- A META ANALYSIS RESEARCH

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ABSTRACT

Background: Head and Neck cancers are a group of diversified entities arising from the mucous membrane lining and other various tissues of the orofacial region. The cause for the same has been documented to be certain lifestyle patterns and environmental risk factors. Since a great percentage of these malignancies are still being diagnosed at advanced stages, need of the hour and the only light of hope is early detection and a subsequent expected steady decline in their incidence. In this regard, amongst the numerous arenas of research, the concept of Cancer Stem Cells (CSCs) and their transition in the incidence, pathogenesis, metastasis and in turn its implications on newer treatment modalities of cancer is much sought after in the recent times. CSCs are a subpopulation of cells present in the arena of an oral cancer tissue. These cells are mutated stem cells, hijacking the attributes of self renewal and continued replicative potential native to the characteristics of a normal stem cell. Hence they are said to be contributory to clinic pathological behaviours of cancers like tumorigenicity, metastasis and recurrence. Most researched surface markers used to identify CSCs are CD44, CD133, ALDH1. No single surface marker has hitherto been substantially hallmarked to identify a tissue specific CSC. Hence a set of surface markers most often need to be employed in combination for the same. Research Question: Are the Oral Cancer Stem Cells actually responsible for causing Oral Cancer? **Materials & Methods:** With the Medline, Cochrane and Medknow database (English literature) taken as a source for authenticated scientific research data, articles having undergone

Randomised Control Trial based studies were chosen and finally amongst them the articles will be selected which would meet the criterion for Meta Analysis. **Result & Conclusion:** Since the study is still in progress, the results will be discussed during the presentation at the venue.

Keywords: Cancer stem cells, Oral cancer, stem cell markers

IDCMR-22F48

PLUMES -AN UNWIND STORY

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ABSTRACT

Introduction: “The biggest obstacle to eliminating surgical smoke isn’t access to technology solutions – it’s changing the status quo”- G Thomas Ruiz, MD. During the last three decades as technology developed the methods used to dissect tissue and haemostasis during surgery has changed. In modern surgery, laser sources are often used to cut tissue, whereas previously thermal cauterisation alone was done. Plumes are noxious airborne contaminants generated as by-products, particularly by procedures that rely on the ablation, cauterization, thermal desiccation, or mechanical manipulation of target tissue by devices such as lasers, electrosurgical generators, broadband light sources, ultrasonic instruments, and surgical instruments such as high speed drills and bone saws. Plumes production is increasing with increased use of tools such as electro cautery, laser, and mechanical drills. **Conclusion:** This literature review highlights sources of plumes, effect of plumes on health and Prevention of potential hazards of plumes.

Keywords: Plumes, Lasers, Electrosurgical units, Ultrasonic instruments

IDCMR-22F49

NOBLE USE OF ARTIFICIAL INTELLIGENCE IN DENTISTRY: A NARRATIVE REVIEW

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ABSTRACT

Aim: The aim of this narrative review is to evaluate and summarize current applications and future perspectives of artificial intelligence in dentistry. **Methodology:** Published studies were identified by searching the following databases: MEDLINE, Web of Science, Cochrane Collaboration Library, Google Scholar and EMBASE. The search consisted of studies published in the English language between 1995-2021 using any combination of the following search terms: “artificial intelligence”, “digital dentistry”, “AI in dentistry”, “future perspectives of AI”. **Results:** The results confirmed a historically unprecedented boom in AI dental publications, with an average increase of 21.6% per year over the last decade and a 34.9% increase per year over the last 5 years. The results of

this assessment indicated the relative proportions of focal topics, as follows: radiology 26.36%, orthodontics 18.31%, general scope 17.10%, restorative 12.09%, surgery 11.87% and education 5.63%. The review confirms that the current use of artificial intelligence in dentistry is concentrated mainly around the evaluation of digital diagnostic methods, especially radiology; however, its implementation is expected to gradually penetrate all parts of the profession. **Conclusion:** This review shows that artificial intelligence and the use of neural networks has developed very rapidly in recent years, and it may be an ordinary tool in modern dentistry in the near future. The advantages of this process are better efficiency, accuracy, and time saving during the diagnosis and treatment planning. More research and improvements are needed in the use of neural networks in dentistry to put them into daily practice and to facilitate the work of the dentist

IDCMR-22P03

THE CURRENT USE OF ARTIFICIAL INTELLIGENCE IN PEDIATRIC DENTISTRY

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ABSTRACT

Introduction: Artificial intelligence (AI) is software that mimics human cognitive processes and behaviours with greater accuracy and quicker reaction. In dentistry, AI is being used for a variety of purposes, specifically diagnosis of diseases, and prediction of treatment outcomes. However, the current use of AI in pediatric dentistry has not been explored. **Objectives:** To survey the current use of AI in pediatric dentistry. **Materials and Methods:** The original publication was thoroughly searched using PubMed/MEDLINE databases by an investigator. The two primary search terms used in this study were (dent*) and (AI, artificial intelligence, deep learning, machine learning, or neural network). The search was limited to articles published between 2010 and 2022 and written in English. The inclusion criteria were any AI applications related to the pediatric dentistry field. **Results:** There were sixteen articles fulfilled inclusion criteria and mainly related to the detection of caries and developmental dental disturbance. Eight articles developed AI to help detect caries lesions, particularly at proximal surfaces. However, most studies were conducted on permanent teeth. Another study that focused on primary teeth found that two studies developed AI models: one for detecting plaque and the other for predicting the severity of early childhood caries by incorporating clinical, demographic, behavioral, and parent-reported oral health status. The application of AI on the detection of developing anomalies was found in six studies: two on ectopic eruption, two on supernumerary teeth, the others on submerged primary teeth and molar-incisor-hypomineralization. All studies demonstrated the excellent accuracy of the AI model. **Conclusion:** The application of AI in pediatric dentistry is very limited and in the early stages. The use of AI in pediatric dentistry should be developed further as it is a potent instrument for simulating clinical expertise and overcoming human limitations to improve the provision of oral healthcare for children.

IDCMR-22F25

AI AND ROBOTICS IN RESTORATIVE DENTISTRY AND ENDODONTICS – NOT A SCIENCE FICTION ANYMORE

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ABSTRACT

Background: Artificial intelligence and Robotics is fast moving technology that enables machines to perform tasks previously exclusive to humans. Health care benefits with this technology are decreasing postoperative complications, increasing quality of life, improving decision making, decreasing the number of visits and

improving ergonomics of the clinicians. Aims: the aim of this review is to discuss the current restorative and endodontic applications of AI and Robotics along with its potential future directions. **Discussion:** AI is a branch of computer science that uses computer technology to simulate intelligent behaviour, critical thinking, and decision making, similar to humans. On the other hand, Robotics deals with the design, construction, operation, and application of robotics, a machine capable of carrying out a complex series of action automatically. Pertaining to restorative dentistry and endodontics, current applications of AI include caries diagnostics, radiological diagnosis of endodontic pathologies. Working length determination, morphology of root canal system, retreatment prognosis and predicting viability of stem cells. Current application of robotics includes robotic education.

IDCMR-22P14

APPLICATION OF COPPER NANOPARTICLES IN DENTISTRY

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ABSTRACT

Background: Nanoparticles based on metal and metallic oxides, including copper nanoparticles have become a novel trend for dental applications. **Objective:** The objective of this presentation is to provide an overview of copper nanoparticles and their applications in dentistry. **Methods:** A systematic search of the original research was conducted on copper nanoparticles in dentistry. The definition, mechanism, properties and applications using copper nanoparticles in dentistry were summarised. **Results:** Metal nanoparticles are commonly used in dentistry for their exclusive shape-dependent properties, including their variable nano-sizes and forms, unique distribution, and large surface-area-to-volume ratio. These properties enhance the bio-physio-chemical functionalization, antimicrobial activity, and biocompatibility of the nanoparticles. Copper is an earth-abundant inexpensive metal, and its nanoparticle synthesis is cost effective. Copper nanoparticles readily intermix and bind with other metals, ceramics, and polymers, and they exhibit physicochemical stability in the compounds. Hence, copper nanoparticles are among the commonly used metal nanoparticles in dentistry. Copper nanoparticles have been used to enhance the antibacterial and physicochemical properties of various dental materials, such as dental amalgam, restorative cements, adhesives, resins, endodontic-irrigation solutions, obturation materials, dental implants, and orthodontic archwires and brackets. **Conclusion:** In conclusion, nanoparticles were developed in dentistry because of their favourable bio-physio-chemical functionalization, promising antimicrobial activity, and promising biocompatibility.

Keywords: Copper nanoparticles, antimicrobial, dentistry

IDCMR-22P24

SILVER DIAMINE FLUORIDE THERAPY FOR DENTAL CARE

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ABSTRACT

Silver diamine fluoride (SDF) was developed in Japan in the 1960s. It is used to control early childhood caries, arrest root caries, prevent fissure caries and secondary caries, desensitise hypersensitive teeth, remineralise hypomineralised teeth, prevent dental erosion, detect carious tissue during excavation and manage infected root canals. SDF is commonly available as a 38% solution containing 255,000 ppm silver and 44,800 ppm fluoride

ions. Silver is an antimicrobial and inhibits cariogenic biofilm. Fluoride promotes remineralisation and inhibits the demineralisation of teeth. SDF also inactivates proteolytic peptidases and inhibits dentine collagen degradation. It arrests caries without affecting dental pulp or causing dental fluorosis. Indirect pulp capping with SDF causes no or mild inflammatory pulpal response. However, direct application of SDF to dental pulp causes pulp necrosis. Furthermore, SDF stains carious lesions black. Patients must be well informed before SDF treatment. SDF therapy is simple, painless, non-invasive, inexpensive, and requires a simple armamentarium and minimal support. Both clinicians and patients generally accept it well. In 2021, the World Health Organization included SDF as an essential medicine that is effective and safe for patients. Moreover, it can be used for caries control during the COVID-19 pandemic because it is non-aerosol-generating and has a low risk of cross-infection.

Keywords: silver diamine fluoride, caries, prevention, dentine, hypersensitivity

IDCMR-22P10

VISUAL PEDAGOGY IN DENTISTRY FOR AUTISM SPECTRUM DISORDER AND ATTENTION - DEFICIT HYPERACTIVITY DISORDER: A CASE REPORT

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ABSTRACT

Background: The autism spectrum disorders (ASDs) and attention-deficit hyperactivity disorder (ADHD) are neuro-developmental disorders. The provision of dental care for affected children can be challenging. Visual pedagogy is a learning approach which composes of a set of coloring pictures that guide patient with ASD to be familiar with the dental treatment hygiene skills. **Case report:** A 4-year-old girl with ASDs and ADHD, presented to Pediatric Dental Clinic, Mahidol university, Thailand. Her chief complain was toothache with spontaneous pain for two weeks. Oral examination found that she had multiple dental caries and poor oral hygiene. Her behavior was un-cooperative; excessive hyperactive and inattentive. Her parent denied to treat under pharmacological technique. The treatment was planned using non-pharmacological technique; physical restraint at emergency visit. After that the treatments were performed using visual pedagogy and psychological management. Before dental visit, dentist send the link of visual pedagogy of Mahidol Faculty to parents for preparing the patient to familiar with dental instrument and environment. The parents also prepared cartoon book about cleaning teeth and foods that cause tooth decay for motivation the patient. After using this technique, the patient was able to walk up and sit on the dental unit by herself, showing more co-operation. Finally, the patient turned to be co-operative behavior with positive attitude to dental treatment as well as improved oral hygiene. **Discussion:** This case illustrated a successful non-pharmacological dental management with visual pedagogy and psychological management. However, to make this technique success, knowing patient information and parent's co-operation are very important. **Conclusion:** In conclusion, visual pedagogy supports ASD children in co-operation during dental care and improves their oral hygiene skills.

Keywords: attention-deficit hyperactivity, autism, children, dental management, visual pedagogy

IDCMR-22P29

NOVEL TECHNIQUE OF PRF INDUCED REIMPLANTATION

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ABSTRACT

Description of case: The aim of this case reports was to evaluate the effectiveness of Platelet rich fibrin (PRF) in promoting healing of socket after re-implantation of avulsed tooth. Uniqueness of case: PRF is a biomaterial derived from human blood, part of a platelet concentrate obtained through a centrifuge separating it. The understanding of PRF is that it aids in wound healing by protecting the surgical site as a scaffold for regenerative changes and promote tissue repair. PRF when mixed with bone graft is expected to act as a “biological connector”, that aids in migration of osteoprogenitor cells to the center of the graft, and promotes neo-vascularization and regeneration. In the following case report novel technique of PRF induced reimplantation is discussed. Details of treatment and follow up: Tooth avulsion is a condition in which tooth is completely displaced out from its socket commonly due to trauma. Whenever a tooth is avulsed, dental pulp cells, periodontal ligament cells, cementum, gingiva and alveolar bone are all damaged but the ultimate challenge in the management of avulsion is to maintain the vitality of periodontal cells which in turn dictates the treatment outcomes. Replantation of the teeth should be done immediately after avulsion in order to achieve the best treatment outcome. Due to various reasons, replantation of the avulsed teeth is not always possible immediately. Thus, an appropriate protocol of managing the avulsed teeth should be followed based on the presenting clinical situation. The extent of damage to tooth and supporting structures, emergency treatment and follow-up period plays a vital role in the prognosis of avulsed tooth. Thus, all factors need to be addressed effectively and efficiently for a better prognosis of the replanted teeth. **Case 1:** Delayed re-implantation of avulsed tooth with total extra-oral time of 32 hours and follow up of 1 month. RCT was performed on the avulsed tooth. The socket was induced with PRF the teeth were placed into the sockets and was splinted. The one month follow up has been favourable.

IDCMR-22P09

THE MANAGEMENT OF NATAL TOOTH IN BILATERAL CLEFT LIP AND CLEFT PALATE BEFORE NAM FABRICATION

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ABSTRACT

Background: Primary teeth usually start to erupt at 6 months of age. It is uncommon for teeth to appear at birth or during the neonatal period. Neonatal teeth emerge throughout the first month of life, while natal teeth are present at birth. According to reports, natal/neonatal teeth are more common among clefts and congenital anomalies. **Case report:** A 27 days female newborn was referred to Pedodontic department, Mahidol University for extract natal tooth prior to fabricate nasoalveolar molding (NAM). The patient has bilateral cleft lip and cleft palate, with underlying precaution of unspecified Human Immunodeficiency Virus disease (HIV) and on Lamivudine, Zidovudine, Nevirapine. The natal tooth was at upper left anterior region and had incisal third of crown erupted with gingival swelling, first mobility. Radiograph was performed to confirm that the natal tooth is

primary tooth 61, has crown completed formation, no root formation. 61 was extracted with forcep technique under local anesthesia. Then, the patient was referred back to Orthodontic department for NAM placement to reshape premaxilla, alveolar ridge, lip, and nasal cartilage in order to reduce severity of oronasal deformity before cleft lip surgery. **Discussion:** In this case, removal of natal teeth is indicated when interfere with feeding, highly mobile, and also the need to fabricate NAM at upper arch in bilateral cleft lip and cleft palate patient. No need of prophylactic administration of vitamin K because the newborn is more than 10 days old. Universal precaution guideline was applied for prevention of transmission of HIV disease. **Conclusion:** Natal/neonatal teeth are frequently found associated with developmental abnormalities and recognized syndromes including cleft lip and palate, which need to be extracted prior to perform presurgical NAM.

Keywords: Natal tooth, Cleft lip, cleft palate, Nasoalveolar molding (NAM)

IDCMR-22P37

SILENCER APPLIANCE – SLEEP LIKE A BABY

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ABSTRACT

Introduction: Oral appliance is first line of treatment in patients with OSA. Treatment of sleep disordered breathing (i.e., snoring, upper airway resistance syndrome, sleep apnea syndrome) can be done in several ways that includes (1) Lifestyle modification i.e., weight loss, cessation of evening alcohol ingestion, sleep position training (2) Upper airway surgery (3) Oral appliances and (4) CPAP. The only non-invasive alternative, which can provide favorable results within a short time, are oral appliances. Oral appliances for OSA attracted attention in the western countries in the early 1990s. Through this scientific paper we are presenting an oral appliance which is an affordable alternative in reducing sleep apnea and providing a better life to patients. **Case:** A 49-year-old male patient named Babu reported to Department of Orthodontics with chief complaints of disturbed sleep and snoring during sleep. On extra oral examination, patient had straight profile, acute nasolabial angle and obtuse mento labial sulcus. On intra oral examination, it showed class I molar relationship bilaterally, class I canine relationship bilaterally, mild crowding in lower anteriors, trauma from occlusion irt 24, 25, 26. On Cephalometric analysis patient had an orthognathic maxilla and mandible, vertical growth pattern with reduced lower pharyngeal space. On radiographic evaluation with the help of lateral cephalogram it was found that patient had orthognathic maxilla and mandible with vertical growth pattern and backwardly positioned mandible and hence reduced lower pharyngeal space. **Discussion:** Several oral appliances were used in the past to treat obstructive sleep apnea. Through this study an attempt was made to find an affordable alternative to conventional oral appliances used for sleep apnea that are expensive and time consuming and at the same time function in a similar way. Silencer appliance is highly economical, can be easily fabricated in regular laboratory setup, less bulky and more comfortable for the patients without any metal parts which may cause discomfort. With silencer appliance there was significant improvement in the quality and duration of patients sleep with reduced snoring. Epworth sleepiness scale showed significant improvement. **Conclusion:** ESS score has decreased from 20 to 4. There was significant improvement in the quality and duration of patients sleep with reduced snoring. Drastic reduction in tiredness and fatigue during morning time. Silencer appliance can be used as an alternative to other oral appliances in treatment of obstructive sleep apnea.

Keywords: Obstructive sleep apnea, Silencer appliance, Epworth sleepiness scale.

IDCMR-22P38

PRESURGICAL NASOALVEOLAR MOULDING – A BOON FOR THE UNPRIVILEGED: A CASE REPORT

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ABSTRACT

A 10-day-old female infant reported to the department with unilateral cleft lip, alveolus and palate, wide alveolar defect, soft tissue deformity and a markedly sunken nasal wing at the cleft side. The patient was treated with lip taping followed by a moulding plate synchronously with a nasal hook. The cleft edges moved closer by 8 mm at the alveolar ridge and the nasal wing was lifted considerably. Presurgical Nasoalveolar moulding helped to reduce the cleft gap, improve the arch form, approximate lip segments, and distinctly improve the morphology of the nose by correcting the flattened nasal wings.

Keywords: Unilateral cleft lip, moulding plate, nasal hook, cleft gap.

IDCMR-22P39

NON-SURGICAL CORRECTION OF NON- SYNDROMIC UNILATERAL CONDYLAR APLASIA WITH HEMIFACIAL MICROSOMIA- A CASE REPORT

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ABSTRACT

A 5-year-old boy reported to department of orthodontics with a chief complaint of facial asymmetry and under developed lower jaw. Extra oral examination revealed facial asymmetry with severely retruded mandible, deflection of mandible towards right side on opening. Panoramic radiograph showed complete absence of condyle on the right side. Ramus and body of the mandible on right side were comparatively smaller than the left side. Condylar aplasia on right side was confirmed through CBCT. On clinical examination, radiographic findings and the absence of other symptoms related to Goldenhar syndrome, the patient was diagnosed with “*Non syndromic unilateral condylar aplasia with hemifacial microsomia*”. The treatment plan consisted of 3 phases. Functional phase, Fixed mechanotherapy & Surgical phase. Functional jaw orthopedics was initiated using a modified Activator with occlusal component of the appliance present only on the right side with condylar aplasia, which was expected to increase the ramus height and correct the facial asymmetry. The appliance therapy was continued for 3 years and the results were compared with the help of Orthopantomogram. The results showed there is an increase in the ramus height as well as mandibular body length. Post treatment extra oral photographs revealed marked improvement in the facial asymmetry and midline shift along with mandibular advancement. Patient has to undergo condylar replacement surgery after growth completion.

Keywords: Condylar aplasia, Hemifacial microsomia, Facial assymetry

IDCMR-22U15

DIRECT CLASS IV RESTORATION USING SINGLE-SHADE COMPOSITE RESIN: CASE REPORT SERIES

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ABSTRACT

Background: Natural teeth have wide color variability, which led to the fabrication of a composite system with a multi-shade selection. Restoration of anterior teeth demands high aesthetics that present a great challenge to the clinician. Manufacturers have developed a so-called single shade composite claiming to match all tooth colors to simplify shade selection, minimize composite inventory, and shorten the chair-side time. **Case Presentation:** These case report series illustrate two class IV restoration cases in upper anterior teeth. The first case presented a 48-year-old man with a crown fracture of the central incisor in the disto-incisal aspect, and the second was a 23-year-old man with caries of the lateral incisor in the mesio-incisal aspect. The teeth were prepared, and the treatment was done with direct restoration with a single shade composite resin, Omnicroma. **Discussion:** Anterior direct restoration using single-shade composite provided an acceptable color match in the current cases with the advantage that there is no need to match colors, so the working time is shorter. New materials are continuously being developed to restore the function and aesthetics of the patient's teeth. Omnicroma is a newly developed composite resin consisting of supra-nano spherical filler particles which interact with the incident light and change the transmission of light, so it can match the color of the surrounding teeth. **Conclusion:** The restoration with single-shade composite have matched various tooth color, and achieved optimum esthetics and function. Single-shade composite resin can be an alternative for restoring anterior teeth with satisfactory results.

Keywords: Anterior tooth restoration, Direct composite restoration, Single-shade composite

IDCMR-22U21

IN VITRO CYTOTOXICITY STUDY OF STINGLESS BEE PROPOLIS TOWARDS ORL-48 AND HGF; AI-POWERED CONCEPTUAL BEEHIVE MODEL

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Abstract

Artificial Intelligence (AI) is a technology implemented into machines to mimic human intelligence performing everyday tasks. It may be used in beekeeping promoting healthy, thriving and productive bees producing high quality bee products thus enhancing their pollination activities. Propolis furthermore, possessed anti-bacterial, anti-inflammatory, and anti-proliferative properties. AI may play an important role in ensuring sustained supply of this raw material. **Objectives:** Our aim is to evaluate the cell proliferation after comparative treatment with Malaysian *Heterotrigona itama* (HI) propolis on oral squamous cell carcinoma, ORL-48 and Human Gingival Fibroblasts (HGF). Additionally, we aim to provide a modified beehive model with the implementation of AI for

beekeeping optimisation. **Methods:** Cytotoxic effects of HI propolis, Cisplatin and DMEM were investigated using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. The proposed modified bee hive were assembled from a conceptual plan blueprint, until functioning prototype simulated model. **Results:** Data were analyzed by one-way ANOVA, followed by Tukey's test with level of significance set to $p < 0.05$. A dose dependent anti-proliferative response of HI propolis on ORL-48 cell growth was observed, with 50% growth inhibition (IC₅₀) at concentration 4.58 mg/ml at 48h, and 6.24mg/ml at 72h ($p < 0.05$). HI propolis treatment to HGF cells indicated a corresponding increase in their cell proliferation percentage, was observed, but for Cisplatin, the IC₅₀ concentration on ORL-48 is 0.0036mg/ml at 72h ($p < 0.05$) while its treatment to HGF cells showed no markedly reduced cell viability. A blueprint of beehive model was designed incorporating AI. **Conclusions:** Propolis was found to reduce ORL-48 proliferation by being less cytotoxic towards normal cells and on an encouraging note, these fibroblasts propagation was additionally evident. It may indicate its usefulness as chemotherapeutic and chemo-preventive adjunct agents in managing oral squamous cell carcinoma. The impact of AI holds to sustain the beehive environment is significant for the optimized bee products.

Keywords: Malaysian propolis, ORL-48, Human gingival fibroblast, Cytotoxicity, *Heterotrigena itama* propolis, Artificial intelligence

IDCMR-22U22

ACOU@PLAY APP AS A MUSICAL RELAXING TOOL IN DENTAL MANAGEMENT: WHAT THEY SAY?

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ABSTRACT

Introduction: Recent studies provided a clear view on how musical interventions may reduce stress and increase well-being. ACOU@PLAY app was developed with the aims as an app that uses self-preference musical intervention in managing patients with dental anxiety to ease short and simple procedures. **Objective:** To determine and compare the acceptance between dental students and patients towards the ACOU@PLAY app as a musical relaxing tool. **Method:** A total of 72 participants (38 dental students and 35 patients) were recruited to watch a 5 minutes video regarding the ACOU@PLAY app. Evaluation was done using a questionnaire that included a demographic survey and the modified user version Mobile App Rating Skill (uMARS). The uMARS questionnaire included five domains: (engagement, functionality, aesthetics, information, and app subjective quality) using 5 points Likert scale. **Results:** The app quality mean score was 3.96 ± 0.509 based on the mean scores of engagements, functionality, aesthetics, information and app subjective quality. Overall, the app scored highest in information (Mean= 4.14 ± 0.577) and lowest in app subjective quality (Mean= 3.63 ± 0.565). However, the rating of app quality mean score by dental clinical students was slightly lower (3.86 ± 0.520) compared to the patients (4.07 ± 0.480), but no significant differences ($p > 0.05$). When comparing the patient's anxiety level, slightly anxious group (35.40%, n=23) shows the highest mean of rating and significantly seen in all of the domains except for the information domain ($p < 0.05$). **Conclusion:** The ACOU@PLAY app demonstrated adequate qualities to be used as a self-preference musical intervention for patients with dental anxiety.

Keywords: Musical intervention, Dental anxiety, Gag reflex, Musical app, Acceptance.



IDCMR-22P41

MORPHOMETRIC ANALYSIS OF MENTAL FORAMEN USING CBCT. A RETROSPECTIVE HOSPITAL BASED STUDY

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ABSTRACT

The mental foramen (MF) is an essential anatomical landmark in the buccal cortex of mandible and is mostly present between the root tips of the mandibular premolars. A precise knowledge of its position, shape, and size is crucial for successful and complication-free dental procedures such as surgical implant placement, endodontic surgeries, and any osteotomies in the region. Variation in the morphology, size and position of mental foramen can also be used as a valuable key in forensic investigations. Cone Beam Computed Tomography (CBCT) provides vital information pertaining to the anatomic structures and their variations and their proximity to the apices of teeth. **Aim/Objective:** To evaluate the size, position and anatomical variation of mental foramen by CBCT in patients of different age groups, ethnicity and gender. **Methodology:** A total of 50 CBCT scans from patients aged 18–80 years were selected. Images were evaluated using the following parameters: position and size of the MF, and Distances A (distance from the upper limit of the MF to the apex of the first mandibular premolar), B (distance from the upper cortical border of the MF to the alveolar crest), and C (distance from the border of the MF to the base of the mandible). **Results:** In the present study the location of the MF was predominantly apical (64%), in line with second premolar and at a mean distance of 5.55 mm from the root of the first mandibular premolar. There was statistically significant difference ($p < 0.05$) among males and females for the distance from the alveolar crest to the mental foramen (M-18.65mm, F-16.86mm) and the distance between the 1st pre-molar root tip to the mental foramen (M-6.17mm, F-4.83mm). However, there was no significant difference in the distance from MF to the inferior border of the mandible, the size of MF among different age groups, gender, ethnicity. **Conclusion:** The location of the MF was predominantly apical in line with second premolar, and the distance between mental foramen to the root tip of first premolar was higher in males and was statistically significant. The mean size of MF was not of statistical significance among gender, age groups and ethnicity.

Keywords: Mental Foramen, CBCT

IDCMR-22P42

THICKNESS OF THE SCHNEIDERIAN MEMBRANE AND ITS CORRELATION WITH AGE AND GENDER: A CONE BEAM COMPUTED TOMOGRAPHY STUDY

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ABSTRACT

The maxillary sinus is the first paranasal sinus to develop and is the largest of the paranasal sinuses in the maxillofacial region. The maxillary sinus varies in size, shape, thickness of the walls in not just in different individuals but also between the two sides in the same individual. The Schneiderian membrane is the mucous membrane that forms a lining on the inner part of the maxillary sinus. The thickness of the Schneiderian membrane, as well as morphological variations of the maxillary sinus, play a crucial role in surgical procedures

involving the sinus. The clinician and the maxillofacial surgeon should be vigilant and consider these vital features in planning surgical procedures in order to improve and obtain good surgical outcome and also minimize intra- and post-operative complications. CBCT provides essential three-dimensional information of the internal aspect of the maxillary sinus. In the international literature, there is a limited number of studies that quantify the dimensions of the Schneiderian membrane using CBCTs. This study is aimed to assess the thickness of Schneiderian membrane in patients belonging to various age groups and gender using CBCT.

IDCMR-22P44

A SURVEY ON THE KNOWLEDGE AND PERCEPTION OF ARTIFICIAL INTELLIGENCE AMONG DENTAL GRADUATES-A PILOT STUDY

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ABSTRACT

Introduction: In recent years the popularity of artificial intelligence (AI) has been increasing however, high cost and limited knowledge can often refrain practitioners from using AI. Privacy, security and ethical concerns, and the possibility of machine errors are the dilemmas where practitioners are still seeking clarity. To realize the depth of application of AI in the healthcare industry, it is important to assess the knowledge and perception of professionals. A limited number of surveys are conducted both abroad and in India regarding the knowledge, and perception of the application of AI in dentistry among young dental graduates. **Aim/Objective:** The aim of this study is to gain insight into the knowledge and perception of AI and its applications in dentistry among dental graduates. **METHODOLOGY:** The study will include 60 participants. A 12-item questionnaire survey will be given to the interns and Postgraduates working in the Dental Institute to collect the required information. The confidentiality of the participants will be maintained and they will be informed about the goals of the survey.

Results/Statistics: The data collected from the questionnaire will be subjected to statistical analysis to evaluate knowledge and perception of AI.

Keywords: Artificial Intelligence, knowledge, perception

IDCMR-22U27

DEEP LEARNING-BASED DETECTION OF IMPACTED MANDIBULAR THIRD MOLARS AND CLASSIFICATION OF EXTRACTION DIFFICULTIES

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ABSTRACT

Introduction: Deep learning has been flourishing in aiding dentists in the diagnosis of dental problems, however it is still sparse in Vietnam. **Aims & Objectives:** To describe the sensitivity, specificity and accuracy of a deep learning algorithm in detecting impacted mandibular third molars (MTMs) from panoramic radiographs and categorizing their surgical difficulties; and to evaluate factors influencing its accuracy. **Materials and Methods:** A retrospective study was conducted using an established deep learning model, the Faster R-CNN model using the ResNet50, which was trained on a dataset of 619 panoramic radiographs, and tested on a total of 439 MTMs

in 249 panoramic radiographs. The reference standard was the diagnosis of experienced dentists according to the modified diagnostic scale developed from the Modified Parant Scale. After that, univariate and multivariate logistic regression analysis was performed to assess associated factors of the model's accuracy. **Results:** 341 MTMs in 217 panoramic radiographs were detected by our model, showing the sensitivity and specificity of 77.68% and 83.05%, respectively, while for identifying impacted MTMs, it also had the high sensitivity and specificity (83.75% and 76.24% in that order), with notably good balanced accuracy (80%). However, regarding classification of surgical difficulties, it only had a balanced accuracy of 32.16%. Incorrect results were the most likely to be observed for impacted MTMs with Parant class III (OR = 0.004 (95%CI: 0.0005 – 0.30)), but surgical considerations for female patients seemed to increase the model accuracy (OR = 1.59 (95%CI: 1.03 – 2.46)). **Conclusion:** The Faster R-CNN model with ResNet50 had a promising result in detecting MTMs and indicating their extractions, but a more extensive training and validation process is crucial for its ability in classifying extraction complexity, taking into account variability of the Parant scale and gender as significant factors.

Keywords: Deep learning, Impacted tooth, Panoramic radiography, Third molar

IDCMR-22P26

AI RADIOMICS METHOD FOR DIFFERENTIATION OF AMELOBLASTOMA AND ODONTOGENIC CYSTS BASED ON CBCT

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ABSTRACT

Background: Artificial intelligence (AI) improved in recent years, it is possible to detect lesions and predict disease through machine learning preoperatively. Because of the similar features of ameloblastoma and odontogenic cysts in panoramic radiographs and CBCT, accurately distinguishing them only by doctors became very difficult. Therefore, our research used the Radiomics method depending on artificial intelligence (AI) to extract high-throughput image features from CBCT for distinguishing ameloblastoma and odontogenic cysts.

Objectives: To investigate the application value of AI radiomics method in preoperative diagnosis of ameloblastoma and odontogenic cyst based on CBCT. **Methods:** The CBCT data of 104 patients with pathologically diagnosed cystic lesions of the jaw (including 45 cases of ameloblastoma and 59 cases of odontogenic jaw cysts) were retrospectively analyzed. The radiomics features were extracted by semi-automatic delineation of the lesion area. After feature screening, the Support vector machine (SVM), Random forest(RF) and Logistic regression(LG) models were constructed, and the comprehensive models were constructed by combined conventional imaging features. The models were assessed using the area under the receiver operating characteristic curve (AUC) and accuracy. **Results:** In the testing set, the AUC values of the radiomics models were 0.849 (95%CI 0.707-0.991), 0.865 (95%CI 0.734-0.996), and 0.849 (95%CI 0.703-0.995), respectively, the accuracy was all 81.3%. The AUC values of the comprehensive models were 0.877(95%CI 0.751-1.000), 0.873(95%CI 0.747-0.999), and 0.889(95%CI 0.765-1.000), the accuracy were 81.3%, 81.3%, and 84.4%, respectively. However, neither between the three models nor radiomics and comprehensive models have a significant difference ($p > 0.05$). **Conclusion:** SVM, RF, and LG predictive models based on the AI radiomics method have shown good discrimination and high accuracy in pre-operative diagnosis of ameloblastoma and

odontogenic cyst, which can be used to assist diagnosed ameloblastoma and odontogenic cyst and guided treatment.

Keywords : Ameloblastoma; Odontogenic cyst; Radiomics.

IDCMR-22F33

COMPARATIVE ANALYSIS OF TWO BIOACTIVE SEALERS AND AH PLUS ON THE MICROHARDNESS AND FRACTURE RESISTANCE OF RADICULAR DENTIN AT FOUR TIME INTERVALS – A ONE YEAR IN VITRO STUDY

Sarin Koroth

ABSTRACT

Introduction: Endodontic therapy involves complete extirpation of infected pulp or necrotic debris within the root canal, followed by shaping of the canal and disinfection to receive the obturating material that would seal the root canal from ingress or egress of bacteria and bacterial nutrients or toxins. Gutta percha used in conjunction with a sealer helps to seal and contribute to the long-term success of endodontically treated teeth. Some of the ideal requirements of a root canal sealer listed by Grossman are radiopacity, antibacterial effect, biocompatibility, good adhesion, fluid tight seal and retrievability. Unfortunately, no sealer fulfils all the requirements of Grossman. Among inorganic biomaterials, which recently have received great attention because of their physicochemical and biological properties in endodontics are calcium silicate- based cements (CSC) namely mineral trioxide aggregate (MTA) and MTA like materials which include bioceramics, 8 calcium enriched mixture (CEM) and Biodentine. These materials have shown excellent biocompatibility, antimicrobial properties, low cytotoxicity, and low microleakage. **Aims :** To evaluate the effect of bioactive root canal sealers, MTA Plus and BioRoot RCS on the microhardness and fracture resistance of root dentin over time and compare it with AH Plus. **OBJECTIVES:** 1. To determine and compare the effects of bioactive sealers, MTA Plus and BioRoot RCS; using a non-bioactive sealer AH Plus, as control; on the microhardness and fracture resistance of radicular dentin. 2. To determine and compare the effect of exposure time (7days, 28 days, 180days and 365days) with the three different sealers on the microhardness and fracture resistance of radicular dentin. **Methods:** Three hundred and forty-eight extracted sound mandibular premolars were taken. After standardization of the specimens, root canals were prepared with ProTaper Universal rotary files up to size F3. Roots were grouped according to the sealers used into Group I – AH Plus, Group II – MTA Plus and Group III – BioRoot RCS. Root canals were irrigated with 3% sodium hypochlorite and distilled water was used as the final rinse. The root canals were obturated with 30 size 6% gutta percha and the respective sealers using single cone technique. Orifices were then sealed with Cavit G and root samples were stored in phosphate buffer solution (PBS) till use. Fracture resistance and microhardness were measured at four-time intervals; 7days, 28days, 180days and 365days using cervical and mid root dentin sections, respectively. **Results & Discussion:** Measured values were statistically analysed using ANOVA, repeated measure ANOVA and Post Hoc comparison. AH Plus showed higher strength up to 180days. However, BioRoot RCS showed statistically significant increase of both microhardness (MH) and fracture resistance (FR) from AH Plus and MTA Plus at 365days. **Conclusion:** Exposure time has an effect on the microhardness and fracture resistance of root dentin when BioRoot RCS and MTA Plus were used as sealers. Among the three sealers, BioRoot RCS showed better results than MTA Plus and AH Plus in one year. We may conclude that BioRoot RCS has a better dentin reinforcing ability than MTA Plus and AH Plus in one year.

Keywords: Bioactive sealers; tricalcium silicate sealers

IDCMR-22P36

HERBAL BONDING-GOING NATURAL CATEGORY OF PRESENTATION:

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ABSTRACT

Introduction: With the advent of direct bonding agents, a new era has dawned thereby opening new horizons in the specialty of orthodontics both in clinical and research field. The future of bonding is promising as new avenues are opening up but there is still remarkable lack of consensus regarding shear bond strength. Through this scientific paper we would like to highlight the effects of natural herbal products on the shear bond strength and their effect on enamel surface. **Objectives:** • To determine the effect of natural herbal products on enamel surface after etching, debonding and clean up through scanning electron microscope. • To compare the efficacy of a naturally occurring antioxidant Amla (Indian Gooseberry), Lemon and Aloe Vera in adjunction with carboxymethylcellulose (CMC) in normalizing the shear bond strength of enamel. **Background:** In this in-vitro study we evaluated the effect of Amla (Indian Gooseberry), Lemon and Aloe Vera extract in adjunction with carboxymethylcellulose (CMC) on the shear bond strength of composite resin to etched enamel. **Method:** Four extracted premolars from the same patient were divided into 4 equal groups; 1st group control group, bonded directly; 2nd group- Amla extract adjunct as bonding agent, then bonded; 3rd group- Aloe vera extract adjunct as bonding agent, then bonded and 4th group- Lemon extract adjunct as bonding agent, then bonded. Shear Bond strength was checked using Universal Testing Machine and bonded layer evaluation using Scanning Electron Microscope. **Results:** Amla as a bonding agent has the highest shear bond strength followed by lemon, conventional bonding agent and aloe vera. **Conclusion :** • The shear bond strength results obtained of the herbal extract bonding agent has now paved a path in alternating the conventional bonding agents.

Keywords: Amla extract, Aloe vera extract, Lemon extract, carboxymethylcellulose

IDCMR-22P40

THE EFFECT OF PANDEMIC LOCKDOWN ON TOBACCO EPIDEMIC: A WEB-BASED STUDY

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ABSTRACT

Introduction: COVID-19 pandemic, true to its name was seen in every region, every country and has affected every corner of the globe. In India, pandemic involved a restrictive nationwide lockdown that caused significant disruption to people's lives, including greatly reduced physical and social contact with others including family members and friends. The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing more than 8 million people a year, including around 1.2 million deaths from exposure to second-hand smoke. **Objective:** To evaluate the changes in tobacco usage and also, to evaluate the relationship between anxiety and tobacco use during covid-19 lockdown. **Methodology:** An online questionnaire survey with 27 questions on tobacco usage and anxiety was conducted during the second COVID-19 lockdown. The questionnaire was in

English and sent as a google form link through mails and social media platforms. A total of 405 responses were accepted, which included only tobacco users above the age of 18years. **Result:** Results showed that there is 7.2% increase in tobacco usage among daily users and 3.5% increase in monthly tobacco users during the lockdown. The relation between anxiety and tobacco usage was found to be statistically significant ($p < 0.05$). The results are in contrast to Himanshu A. Gupte et al study, wherein 17% of users stopped tobacco habit during initial lockdown. **Conclusion:** Contrasting result compared to first lockdown shows that the population must have been well prepared for the second lockdown with good stock, as the government announced the second lockdown week in advance. Tobacco use is highly prevalent across most anxiety disorders and risk factor for complications in covid-19 infection. So, a ceaseless tobacco cessation planning need be considered during pandemics like COVID-19.

IDCMR-22U45

DENTAL STUDENTS PERCEPTIONS TOWARD HYBRID LEARNING IN POST PANDEMIC PERIOD

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ABSTRACT

Introduction : Dental curriculum has changed since covid 19 period by moving to all online classes. When covid 19 had relief, hybrid learning have been implementing by most universities. Since hybrid learning is a new form of study methods, it is good to see the effectiveness by evaluating the students perceptions on this matter. **Objectives:** The aim of this study was to evaluate the quality of the combination between online learning and physical learning as well as to see the perception of students toward hybrid learning and what difficulty they are facing and what response they decided to do to counter the issues. **Methods:** An online questionnaire was developed using google survey at the Faculty of dentistry, University of Puthisastra and provided among dental students in Cambodian universities. The questionnaire contained demographic information such as age, gender, the amount of time they have been studying online and their opinion regarding hybrid classes. **Results:** Out of the 138 dental students surveyed by means of the questionnaire there were 90% of the students are aged between 21 to 25. 62.5% of students find lecture with handouts are the motivations for them to learn. And surprisingly, over 50 percent for the students do not know what flipped classroom is even though the schools are using this method for students. **Conclusion:** Students are aware of the post pandemic era and most of them try to adapt to the new learning method. Even though some of the students find it hard to study with blended learning, but it is also surprised them with the results of a few benefits they never thought of. Their survey gave important answers to the improvement of the teachers and students way of hybrid learning.

Keywords: POST-Covid-19, Dental students, Hybrid learning

IDCMR-22F23

EFFECTIVENESS OF ASYNCHRONOUS VS SYNCHRONOUS ONLINE HISTOLOGY LEARNING IN COVID-19 ERA AMONG DENTAL STUDENTS

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ABSTRACT

Background of study: The availability of virtual microscope provides opportunity for academicians to prepare online histology teaching content and resume the learning session in this subject particularly during pandemic. Online teaching can be performed either in synchronous or asynchronous way. **Aim of study:** The aim of this study is to determine the effectiveness of asynchronous vs synchronous online learning in histology subject among dental undergraduates. Study objectives: The first objective is to compare the student's performance in identifying histological structures through live online learning (synchronous method) and pre-recorded online videos (asynchronous method). The second objective is to assess students' perception of synchronous and asynchronous online learning in histology. Methodology: Data were obtained from 40 first year undergraduates at Faculty of Dentistry, Universiti Kebangsaan Malaysia (UKM) by comparing their result in Test 1 for synchronous and Test 2 for asynchronous learning. Test 1 and Test 2 were conducted after a live online lecture (synchronous learning) and online histology video (asynchronous learning), respectively. **Result:** Result shows a statistically significant difference between asynchronous and synchronous learning method scores; whereby 77.5% of students score more than 5.0 marks in Test 2 compared to 50% of students that score more than 5.0 marks in Test 1. **Conclusion:** In conclusion, the finding from the study indicate that asynchronous learning method is a more effective medium than synchronous learning method in online learning of histology subject. In contrast findings from the questionnaires indicate that more students prefer learning via synchronous learning rather than by asynchronous learning.

Keywords: synchronous, asynchronous, histology

IDCMR-22F28

EVALUATION OF THE PREAURICULAR TRANSMASSETRIC ANTERIOR PAROTID APPROACH IN THE OPEN REDUCTION AND INTERNAL FIXATION OF CONDYLAR FRACTURES

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ABSTRACT

Background: Numerous approaches have been described to access the fractured condyle. Unrestricted wide optical window to the fracture site and the safety of the facial nerve dictate the type of approach required. **Aims:** To evaluate the pre auricular transmassetric anterior parotid approach in 20 unilateral condylar fractures. **Results:** All the twenty cases evaluated showed adequate mouth opening, no signs of facial nerve palsy and sialocele. The transmassetric anterior parotid approach is a safe approach which can be used in the surgical management of condylar fractures and is of special value in obtaining excellent exposure in the cases of medially displaced condylar neck fractures. The use of nerve stimulator and computer aided surgery can help the surgeon in navigating around the facial nerve thus enabling a safe and predictable outcome.

Key words: Condylar fractures, Computer aided, Preauricular, Transmassetric anterior parotid.

IDCMR-22U32

APPLICATION OF DEEP LEARNING MODEL TO DETECT AND DIAGNOSE FACIAL STRESS

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ABSTRACT

Background: Stress is a common condition that can affect anyone and occurs in almost any population in the world. Methods used to classify facial emotions contact with the use of Deep learning's CNN models promises to create many breakthroughs in medicine. **Aims & Objectives:** To evaluate the effectiveness of Deep Learning model in detecting and supporting the diagnosis of Stress through facial expression; to determine the accuracy of the DL model and build an application for stress identification and diagnosis on the Android platform. **Research Methodology:** 35887 face-to-face portraits were selected on the FER2013 database. The Deep Learning model used in this study was Lenet-5. The data used in the training phase and the test phase were 28709 and 7178 images, respectively. Facial expressions were coded by facial scoring and the machine would answer Yes or No Stress. This result was compared with the doctor's diagnosis to evaluate the sensitivity, specificity, and accuracy of the model. **Results:** Face recognition rate was 100%, in which 100% of images fed into the machine returned facial expression types. Accuracy of model was 92.62%. **Conclusion:** Deep Learning model is effective in detecting and assisting doctors in diagnosing the Stress expressed in the patient's face; however larger studies are needed.

Keywords: Diagnosis, Deep Learning, Facial Expression, Lenet-5, Stress.

IDCMR-22F46

STUDY OF FIXD FUNCTIONAL ORTHOPEDIC MAGNETIC APPLIANCE IN CLASS III MALOCCLUSION DEFORMITY DURING GROWING PERIOD

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ABSTRACT

Objectives: To investigate the mechanism of Fixd functional orthopedic magnetic appliance by its research and development and clinical practices, and to compare changes in osseous, dental and soft tissue indicators after class III functional orthodontic treatment was performed by this system and maxillary protraction, and to study clinical efficacy of the Fixd functional orthopedic magnetic appliance to form the foundation for its clinical application and promotion. **Methods:** Part I: A total of 20 subjects (male 9, female 11 with an average age of 9.5 ± 1.6) were included into this study, who were admitted by the Orthodontic Outpatient Department, affiliated Stomatological

Hospital of Kunming Medical University and diagnosed with functional and osseous class III malocclusion by X-ray cephalometric analysis before orthodontic treatment during 2016-2018; Orthopedic treatment was performed by the Fixed functional orthopedic magnetic appliance. The paired sample T-test analysis was carried out with SPSS21.0 software on measurements of lateral cephalometric radiographs. Part II: A total of 30 subjects were included into this study, who were admitted by the Orthodontic Outpatient Department, Affiliated Stomatological Hospital of Kunming Medical University and diagnosed with functional and osseous class III malocclusion by X-ray cephalometric analysis before orthodontic treatment during 2016-2018; 15 patients (male: n=8, female: n=7) were randomized into the fixed magnetic treatment group with the average age of 10.0 ± 1.8 years old, while 15 patients were included into the protraction group (male: n=6, female: n=9) with the average age of 10.0 ± 1.4 years old; The independent sample T-test analysis was carried out with SPSS21.0 software on measurements of lateral cephalometric radiographs, and a comparison was made in changes between the two groups before and after treatment; And paired sample T-test was carried out, and the efficacy between groups was compared to verify whether there are distinct differences and assess the efficacy of Fixed functional orthopedic magnetic appliance and maxillary protraction, respectively. **Results:** 1. Fixed functional orthopedic magnetic appliance has advantages and features transparency, aesthetics, simple operation, independency of patients' coordination, orthodontic force duration, good fixation, comfort and high efficiency, etc.; 2. Class III bone surface after orthodontic treatment was improved, proper overjet in front tooth area was increased. Molar distalization was detected from mesial movement. Cephalometric measurement analysis indicated ANB, Wits and APDI were significantly increased; 3. Fixed functional orthopedic magnetic appliance is useful for the functional orthodontic treatment against class III malocclusion for patients during the growing period; Maxillary bone and dentition move forward in the sagittal direction after orthodontic treatment by the Fixed functional orthopedic magnetic appliance, maxillary bone rotates forward and upward and upper anterior teeth present with lip inclination compensation; Mandibular bone grows and lower front teeth present with tongue inclination compensation; Soft tissue measurement indicated upper lip inclination and lower lip adduction with improved concave surface; Compared with the maxillary protraction, osseous effect between maxillary and mandibular bones has the consistent change trend after orthodontic treatment by the Fixed functional orthopedic magnetic appliance. However, lower posterior teeth were lowered and dental compensation became obvious, and soft tissue appearance was significantly improved; The mean orthodontic treatment period of fixed magnetic treatment group was 6.5 months while that of protraction group was 9.5 months. **Conclusions:** 1. After class III functional orthodontic treatment by Fixed functional orthopedic magnetic appliance, patients' upper jaw moved forward, occlusion changed obviously, over jet increased and surface type was significantly improved; 2. After class III functional orthodontic treatment by Fixed functional orthopedic magnetic appliance, ANB angle was significantly increased, jaw-bone relation was improved, vertical direction was controlled, upper and lower front teeth had obvious compensation. This system has a shorter treatment period and higher efficiency; 3. Fixed functional orthopedic magnetic appliance features simple operation, transparency and aesthetics, good efficacy, good fixation, independency of patients' coordination, and has special functions. It can be widely applied in the class III functional orthodontic treatment.

Keywords: Magnetic, Fixed appliance, Orthopedics, Class III malocclusion

POSTER PRESENTATION

IDCMR-16U09

LIGATURE-INDUCED PERIODONTITIS IN RATS AND MICE: A SYSTEMATIC REVIEW ON THERAPEUTIC TARG

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ABSTRACT

Introduction: Periodontitis is currently managed through plaque removal, both mechanically and chemically. However, limitation in animal studies is the dissimilar assessment criterion due to different physiology and anatomy when compared to human model in response to treatment. Potential therapeutic target(s) may aid in recognizing impact controlling the inflammation-associated surrounding tissue damage compared to clinical assessment in animal model. There has been strong evidence of preclinical studies on the mechanisms of protection, which may bring insights into the potential therapeutic target(s). **Objective:** This systematic review sought to recognize therapeutic target(s) in response to management of periodontitis in rodent model. **Method:** Scopus, and Wiley databases from 2017 to 2021. This systematic review was conducted in accordance with the PRISMA guidelines and studies were selected based on predefined inclusion criteria. We developed a diagram to show the cellular location of the targets. These targets were summarized based on their effects on the outcome determinants such as inflammatory response and the extend of alveolar bone and/or periodontal attachment loss. Decision matrix analysis was used to identify which target(s) hold the most potential. **Result:** Eleven studies met the inclusion criteria. Result showed that protection in early and late phases of periodontitis involve targets such as transcription factor, protein and lipid kinases, transmembrane receptor and extracellular protein. Further analysis showed that transcription factor is the most investigated target with the most reported protective outcomes. **Conclusion:** Protective targets in periodontitis involve different cellular levels. Transcription factor appears as the most potential therapeutic target in rodent model of periodontitis.

Keywords: Periodontitis, Systematic review, Protective target, Rodent model

IDCMR-16F05

THE TREND OF ARTIFICIAL INTELLIGENCE PUBLICATIONS IN DENTISTRY

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ABSTRACT

Introduction: Artificial Intelligence is a technology applied in the field of dentistry for diagnosis, treatment plan and various predictions in dentistry. **Objective:** The study of Artificial Intelligence research direction in international published journals is important because it is an indicator of technology direction and benefits to be information for researchers to R&D in dental technology. **Materials and methods:** The unit of analysis was

composed of each dentistry publication that appears in the Scopus database. Since our software (Scopus) can analyze the last decade, the study period was limited from 2012 to 2021. The publications were screened and examined based on the title and abstract. **Result:** The total search of Artificial Intelligence Publications in Dentistry was 1,322 manuscripts. Studies included in quantitative synthesis were 324 manuscripts. Our statistics demonstrated an increasing trend in publications during the past four years, significant growth in published was observed, with 11 manuscripts in 2018 and 190 manuscripts in 2021. An increasing trend of countries in publications during the past four years, significant growth in published was observed. **Conclusion:** Studies have shown that artificial intelligence in dentistry is trending between 2017 and 2021 for use in dental diagnosis and treatment planning. Leading countries were India, the United States, and China, respectively, with the title Artificial intelligence for automatic prediction of required surface roughness by monitoring wear on face mill teeth cited the most, 110 times.

Keywords: Artificial intelligence, Dentistry, Publications, Technology, Trend

IDCMR-16P22

THE ESTHETIC ACCELERATOR

Sreedevi

ABSTRACT

Patient's desire of aesthetic appliance in today's fast paced conscious society is sometimes a great challenge. Piezocision in combination with invisalign produce outcomes that are less time consuming as well as aesthetically pleasing. It can be used in selected cases to successfully treat adult patients, who would otherwise not pursue orthodontic treatment. Piezocision is an orthodontically guided minimal invasive surgical procedure to break orthodontic challenges by timely bone density modification. It is a promising tooth acceleration technique because of its various advantages on the periodontal, aesthetic, and orthodontic aspects. Invisalign on the other hand is probably more comfortable than conventional orthodontics and can be handled easily in various ways for example easy to remove for cleaning, for brushing teeth and for consumption of food, in turn satisfies the criteria of aesthetics.

IDCMR-16P21

DIGITAL OCCLUSAL ANALYSIS: A REVIEW ON VIRTUALIZING THE CONCEPT OF CONVENTIONAL OCCLUSAL CALIBRATION

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ABSTRACT

Occlusion has to be the foremost concern while rehabilitating the dentition at any magnitude. The same most commonly has been for long overlooked due to the nuances concerned with the analysis of the same. The conventional occlusal analysis has far been done arbitrarily until the patient and the clinician are in terms with the final outcome of the calibration. The same can be more precisely done along with more promising results when done through digital analyzers. The aim of the review is to provide a comprehensive data regarding the various clinical and theoretical aspects of digital occlusal analysis and analyzers. A compilation of the available literature has led to the comprehension that digital occlusal analysis through its feature of measuring the force and time of

occlusal contact from initial tooth contact till the maximum intercuspation has been achieved, in a real-time window proves to be a game changer in various disciplines of dental rehabilitation. The given advantages and ease of analysis through the data analyzers for occlusion seem to provide a better tool for conclusive analysis of an individual's occlusal force and timing in comparison to the conventional methods and materials which are arbitrarily followed.

Keyword: Occlusion, Occlusal analysis, Digital occlusal analysis

IDCMR-16P20

NAVIGATION IN IMPLANT PLACEMENT – STATIC OR DYNAMIC?

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ABSTRACT

Dental implants are fixtures that serve as replacements for the roots of missing natural teeth. They have to be placed within the residual alveolar bone accurately, in terms of depth, crestal position and angulation. Traditionally, implant placement used to be carried out freehand, with limited guidance from the laboratory. However, this technique resulted in a significant reduction in accuracy of the three-dimensional position of the placed implant, when compared to the planned position. This led to the generation of static and dynamic navigation systems for implant placement. Static navigation systems used the pre-operative Cone-beam computed tomography to fabricate a surgical stent or guide, to place implants via a flapless surgery. Dynamic navigation systems use optical technologies and softwares to track the handpiece and the patient, thus guiding the accurate placement of the implants intraosseously. However, each clinical situation demands a proper technique requiring minimal time, and has to be easy to perform, inexpensive, and comfortable for the patient with best results which calls for a thorough understanding of various techniques available for implant placement, for their best utilization. Detailed procedures of both static and dynamic navigation systems will be explained.

Keywords: Implant placement, Static navigation system, surgical stent, Dynamic navigation system

IDCMR-16F23

DENTIFROBOTS : A FACT OR A FICTION

T S Reshmi

ABSTRACT

The development of modern science and technology depends entirely on information, nano and biological sciences. The thought of biology, artificial intelligence, and nanotechnology convergence promoting a scientific and technical revolution has been lingering for more than a decade now. Although, this multidisciplinary research's expected integration is still in progress. Nanotechnology is the science of manipulating matter, measured in the billionths of meters, roughly the size of two or three atoms. Nanotechnology is an extremely diverse and multidisciplinary field, ranging from novel extensions of conventional physics to completely new approaches based upon molecular self-assembly, to developing new materials and machines with nanoscale dimensions. Nanotechnology is progressing swiftly that it will not be wrong to call it as Magic Bullet as said by

the Nobelist Paul Erlich. Nanorobotic dentifrice or Dentifrobots are sub-occlusally dwelling nanorobots delivered by dentifrice that patrol all supra-gingival and subgingival surfaces with their continuous and fast movement (1–10 $\mu\text{m/s}$) metabolizing trapped organic matter into harmless and odourless vapors and prevents the calculus accumulation and are safely self-deactivated when they are swallowed. Being suspended in liquid and able to swim about, devices would be able to reach surfaces beyond reach of toothbrush bristles or the fibers of floss. They also prevent tooth decay and provide a continuous barrier to halitosis. As newer sciences and associated technologies make their way into interdisciplinary dentistry while creating a huge impact on it, what remains to be seen is how well can the whole fraternity take advantage of the encouraging situation and scale new heights in the field that were deemed impossible previously.

Keywords: Dentifrobots, Nano-dentistry, Nanorobots

IDCMR-16F18

SALIVAOMICS-THE FUTURE OF DIAGNOSTICS

Neetu Sinha

ABSTRACT

Saliva diagnostics have been around for some time due to its ease of availability, abundance, accessibility, non-invasive, and ability to undergo numerous types of tests. When machine learning is combined with salivaomics, it becomes applicable in personalised medicine for evaluation of an individual's condition disease progression along with therapeutic efficacy. Systematic review of literature shows that various genomic, transcriptomic, proteomic, epigenetic, metabolomic and microbiomic salivary biomarkers have been utilized in combination with machine learning to develop point of care diagnosis, prognosis and surveillance technologies. The future research for the need of standardization protocol, focusing on both qualitative and quantitative panel of biomarkers developing algorithm utilizing this multi-omic data to generate better technology for screening, risk assessment, prevention and early diagnosis.

Keywords: Salivaomics, Machine learning, Standardization

IDCMR-16P12

CLINICAL EVIDENCE FOR PROFESSIONALLY APPLIED FLUORIDE THERAPY ON CARIES MANAGEMENT IN OLDER ADULTS

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Abstract

Background: Dental caries is prevalent in older adults. Preventive measures used in other age groups may not be suitable to them, as their caries type and associated risk factors are different. To date, no systematic review has investigated professionally applied fluoride therapy in managing dental caries in older adults. **Aim:** To assess the clinical evidence in preventing and arresting caries in older adults by professionally applied fluoride therapy. **Methods:** Two independent researchers performed a systematic search of English literature published up to 31st Dec 2021 using five databases (PubMed, Scopus, the Cochrane Library, EMBASE, and Web of Science) for clinical trials on professionally applied fluoride therapy for caries prevention or arrest at older adults aged ≥ 60 with a comparison group at any follow-up period. The outcomes were the mean difference in the number of new

caries/caries-prevented fraction and caries arrest rate. The risk of bias was assessed using the Cochrane guidelines. **Results:** A total of 527 studies were identified and 7 of them were included. Five of them were rated as having 'low risk'. The root caries-prevented fraction of 38% silver diamine fluoride (SDF) solution, 5% sodium fluoride (NaF) varnish, and 1.23% acidulated phosphate fluoride (APF) gel were 25–71%, 64%, and 32%, respectively. Meta-analysis showed a decrease in the number of new root caries by 0.55 (95% CI: 0.32–0.78; $p < 0.001$) and an overall proportion of arrested root caries of 42% (95% CI: 33% to 49%; $p < 0.001$) after receiving 38% SDF application at the 24-month follow-up. **Conclusions:** To conclude, 5% NaF varnish and 1.23% APF gel prevented root caries, whereas 38% SDF solution prevented and arrested root caries in older adults. And, there is a need to have more well-designed clinical trials conducted to assess various methods in caries prevention and arrest in older adults.

Keywords: Caries, older adults, silver diamine fluoride, prevention, elderly, oral health

IDCMR-16F01

EFFECTS OF ETHANOLIC EXTRACT FROM MULBERRY ON BIOFILM OF *STREPTOCOCCUS MUTANS* USING CONFOCAL LASER SCANNING MICROSCOPY (CLSM)

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ABSTRACT

Early Childhood Caries (ECC) in young children remains highly prevalent disease worldwide. *Streptococcus mutans* is not only one of the pioneer bacteria in plaque formation but also crucial for its continuous development in dental caries. It is important to prevent the presence of *S. mutans* for more effective prevention of dental caries. To evaluate the susceptibility of two strains of *S. mutans* which are the standard strain (ATCC 25175) and one clinical isolate (N113) from Thai children to the ethanolic extract from mulberry (*Morus Alba*) and evaluate the inhibitory effect of the mulberry extract on growth and biofilm formation of each strain. The inhibitory effect on growth and biofilm formation was performed using a 96-well polystyrene plate biofilm assay. The inhibition and penetration of the mulberry extract was further analysed using fluorescent dyes (SYTO-9 and propidium iodide) and Confocal Laser Scanning Electron Microscopy (CLSM). Data was expressed as mean \pm SD. For the determination of live/dead cells at the excitation wavelength of 485 nm, the green emission at 530 nm (live cells) and the red emission at 630 nm (dead cells) were measured and their ratio was calculated. The Kruskal-Wallis Test was used to compare the experimental and control groups (significance at 95%). Minimum bactericidal concentration (MBC) on *S. mutans* (ATCC 25175) and *S. mutans* clinical isolate (N113) was 125 and 500 mg/ml, respectively. Results showed that 5 and 10 hours preformed biofilms of two strains were sensitive to mulberry extract (99-100%) when compared to the controls. Results from the CLSM demonstrated that all concentrations of mulberry extract (500, 250 and 125 mg/ml) show potential antimicrobial effect. However, only 500 mg/ml showed the highest dead cells of both *S. mutans* strains when compared to control group ($p < 0.05$). The ratio of live:dead cells of *S. mutans* (ATCC 25175) and (N113) are 31.65:68.35 and 43.57:56.43 respectively. The other concentrations have no significant difference. The mulberry extract mulberry at 500 mg/ml has a significant bactericidal effect on preformed biofilms of *S. mutans* (ATCC 25175) and (N113).

Keywords: *S. mutans*, biofilm, Early Childhood Caries, essential oil extract, Confocal Laser Scanning Electron Microscopy

IDCMR-16F02

CYTOTOXICITY OF NEWLY FORMULATED CHLORHEXIDINE MOUTHWASH AGAINST MOUSE FIBROBLASTS

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ABSTRACT

Faculty of Dentistry Mahidol University has formulated a new chlorhexidine mouthwash with improved taste. The new formula possesses the same level of antimicrobial properties as before, but has shown improved consumer acceptance on initial tests. However, in regards to safety, a standardized toxicity test must be carried out for its further development. To evaluate the cytotoxic effects of newly formulated chlorhexidine mouthwash on mouse fibroblasts cells. Chlorhexidine mouthwash was prepared in the laboratory according to the original formula (Faculty of Dentistry, Mahidol University). Inoculums of L929 cell line (cell density 1×10^5 cell/well) were prepared in 96-well cell culture plates and incubated in a CO₂ incubator at 37°C with a relative humidity of 95% for 24 hrs. The toxicity test was performed by using the MTT assay. Cytotoxicity assessment on L929 mouse fibroblasts cell line revealed that the % cell viability was the highest with chlorhexidine gluconate-new formulation, followed by commercially available, and original formula MU Dent chlorhexidine gluconate (% cell viability = 41.50, 41.21, and 39.19, respectively). The newly developed chlorhexidine mouthwash can be considered as safe for oral usage. It also has the potential to be developed into other oral health care products. However, a user satisfaction test must be conducted regarding its palatability and after-taste.

Keywords: Chlorhexidine mouthwash, Mouse Fibroblasts, Cytotoxicity, Cell viability

IDCMR-16F03

ANTIMICROBIAL ACTION NEWLY FORMULATED CHLORHEXIDINE MOUTHWASH AGAINST ORAL PATHOGENS

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ABSTRACT

Chlorhexidine gluconate is classified as a disinfectant and is effective against a wide range of microorganisms. It is also popularly used as a topical solution in dentistry. However, chlorhexidine gluconate mouthwash has a poor

taste during and after rinsing which makes its users dissatisfied. Therefore, the product must be improved to have a better taste but still retain its effectiveness against oral pathogens. To evaluate in vitro antimicrobial activity of modified chlorhexidine mouthwash against oral microorganisms. Chlorhexidine mouthwash new formulation was prepared in the laboratory based on the original formula (Faculty of Dentistry, Mahidol University) and was evaluated for the antimicrobial properties. The microorganism used in the study were *Streptococcus mutans*, *Streptococcus pyogenes*, *Lactobacillus casei*, and *Candida albicans*. The antimicrobial activity of the mouthwash was evaluated by agar disc diffusion method against the tested microorganisms. Distilled water was used as the negative control. 0.12 % Chlorhexidine diluted served as positive control. The newly formulated chlorhexidine mouthwash exhibited antimicrobial activity against all microorganisms with inhibition zones ranging from 17-19 mm, whereas the inhibition zone diameter of negative control was 0 mm. Data from our study showed that the newly formulated chlorhexidine mouthwash retained its effectiveness against *Streptococcus mutans*, *Streptococcus pyogenes*, *Lactobacillus casei*, and *Candida albicans*. The new formula has the potential to treat and prevent oral and throat infections.

Keywords: Chlorhexidine mouthwash, Chlorhexidine gluconate, Antimicrobial activity, Oral microorganisms, Oral pathogen.

IDCMR-16F04

COLOR DEPOSITS ON ACRYLIC DENTURE BASES CAUSED BY DIFFERENT TYPES OF TEA BEVERAGES

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ABSTRACT

Statement of Problem: Drinking of tea increases various color deposits on denture bases. **Purpose:** To study the color changes caused by various types of tea on heat cure and self-cure acrylic resins of removable denture bases. **Materials and Methods:** Specimen of denture bases were prepared and exposed to black tea, oolong tea, green tea, and the control group of deionized water at a temperature of 37° C. Color and fluoride changes were observed at 1, 15, and 30 days post exposure using a colorimeter. The denture base absorbance was measured and quantified for comparative studies. **Results:** From the perspective of absorbance, all teas tested were measurable where their absorbance densities onto the resins were < 3.0. At 1 day post-exposure, there were no significant differences in absorbance densities between any tea types across both resin types. At 15 and 30 days post-exposure, the maximum absorbance was observed in oolong tea in the self-cure resin, while minimum absorbance was observed in the green tea exposure group at levels similar to the control group. **Conclusions:** From a recommendation standpoint comparing all teas, green tea appeared to have the least amount of denture base discoloration. Between resin types, heat-cure resin appears to have less discoloration in the long term compared to self-cure resin. **Clinical Implications:** Heat-cure acrylic resin appears to be the preferred material for reducing staining caused by tea drinking of the patient. For patients who use removable dentures and drink tea, it is recommended that they drink green tea to minimize long term discoloration of the denture base.

Keywords: Discoloration, Absorbance, Exposure



IDCMR-16P13

DIGITAL TECHNOLOGY-AIDED FIXED FULL-MOUTH IMPLANT-SUPPORTED REHABILITATIONS

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ABSTRACT

Background: The key to the success of implant-supported fixed restorations is the ability of a clinician to provide the technician with detailed information regarding a patient's extra-and intraoral characteristics in a manner that can be easily and accurately transferred to the lab bench where it then serves as the foundation for reconstruction of the dentition. In recent years, the impressive evolution of digital technology in dentistry has dramatically facilitated this complex process. **Case Report:** This case reports a 55-year-old healthy male patient with a smoking history of 20 years. He was diagnosed as dentition defect. Under the digital implant surgical guidance, 8 AstraEV implants were implanted in his maxilla and 6 implants in his mandible. Various digital techniques continued to be used to make transitional dentures and permanent restorations after 6 months. This case was followed up for two years. **Discussion:** For edentulous patients with complete implant fixation, the application of digital technology can improve the accuracy of implantation, and it is easier to realize restoration-oriented implant therapy. Progressive weight loading maximized the protection of the implant while maintaining the stability of the occlusal relationship. Two years after the repair, the implant has been loaded well and the occlusion has remained stable. It is observed that the restoration structure is complete and that there is no obvious absorption of an alveolar bone around the implant. **Conclusion:** The full process guide plate, facial scanning technique, electronic facial bow, intraoral scanning and CBCT data are used in the fixed restoration of edentulous jaw, which can obtain accurate position relationship between upper and lower jaw, a facial shape and soft and hard tissue information of edentulous areas, realize the restoration-oriented implant design, shorten the time beside the chair, reduce the number of patient visits, and obtain a satisfactory restoration effect.

Keywords: Digital surgical guide; minimally invasive implantation; Facial scan; fixed implant-supported rehabilitation; Edentulous jaw

IDCMR-22P14

IMPLANT PLACEMENT IN ALVEOLAR SEPTUM GUIDED BY DYNAMIC NAVIGATION

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ABSTRACT

Background: Hounsfield units (HU) of CT are expressed by the CT values as a function of bone density. During preparation of implant sockets, drill is easy to slide to the part with low bone density, especially when implant inserting in alveolar bone septum, resulting placement deviation. Inappropriate implant position leads to poor long-term effect of implant denture function. Guide plate system is used to guide implant surgery, which can

effectively reduce error of free hand. In static navigation system, implant placement would be determined with no visual indication. Metal guide tube could control the drill direction to require an ideal implantation position. Operator change the planned position of the implants. The dynamic navigation system can monitor drilling direction, and reduce implantation error by real-time adjusting direction during operation. **Case Presentation:** This case report describes a 45-year-old male with mandibular right first molar extracted five months ago. CBCT analysis showed the mean HU of extraction socket was 220 while 1119 in alveolar septum, which means low bone density in extraction socket. According to the simulated final restoration before surgery, the best position of implant placement is in alveolar septum. Finally an implant was placed in alveolar septum under the guidance of dynamic navigation system, which accuracy error was only 0.14 (implantation point error 0.189mm, end point error 0.965mm, implant angle error 2.172°, implant point level error 0.22mm, end point level error 0.547mm, implant point depth error+0.789mm, end depth error+0.795mm). **Discussion:** Comparing with free hand and static navigation, dynamic navigation is the most accurate approaches which can monitor drilling direction, and reduce the implantation error by real-time monitor and adjusting the direction during operation. **Conclusion:** The dynamic navigation system can be used for patients with bone density nonuniformity to achieve precise implantation.

Keywords: Dynamic navigation system, Implant, Alveolar septum.

IDCMR-16F15

DIGITAL IMAGE-GUIDED SURGICAL SYSTEM IN THE REMOVAL OF FOREIGN BODY FROM THE MAXILLOFACIAL REGION

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ABSTRACT

Background: Dental fissure bur broken is one of the complications during tooth extraction. The foreign body like broken bur could cause the symptoms of secondary infection and paraesthesia in human body. It is so difficult to remove it from deep maxillofacial space due to its small size and movability. Digital image-guided surgery has the advantages of saving time, localizing the foreign body precisely in deep space. Here, we reported a case with submandibular space metallic foreign body which removed successfully using digital navigation system. **Case report:** A 38-year-old man underwent extraction of left mandibular third molar in a dental clinic. Unfortunately, the fissure bur was broken during the operation and could not find it. Then, under the computed tomography (CT) scanned, a small metallic foreign body lodged in the deep submandibular space, slightly laterally and posteriorly. Considering the position and depth of foreign body, the digital navigation system was used to remove it under general anesthesia successfully. The following steps contained: 1) 3D reconstruction contained the bone, facial soft tissue and broken bur; 2) The measurement of bur length and distance from submandibular incision to bur was made; 3) The 3D STL files were transferred to AccuNavi navigation system (Universal Enterprises Group Co, Shanghai, China); 4) Registration navigation system; 5) Surgical removal of foreign body. **Discussion:** A number of methods were used to locate the foreign bodies, such as radiographic films, digital guide and navigation technology etc. According to the position, size of foreign body with this patient, the digital image-guided surgical system was used to remove the fissure bur in an invasive method. **Conclusion:** Digital navigation system have



the advantages to remove of foreign bodies in the complex, deep maxillofacial region which is surrounded by vital structures. It is an ideal and valuable option for these potentially complicated procedures.

Keywords: Digital; Image-Guided; Foreign body; Maxillofacial region.

IDCMR-16U10

SELF-REPORTED PREVALENCE OF RECURRENT APHTHOUS STOMATITIS AMONG UITM DENTAL STUDENTS

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ABSTRACT

Introduction: Recurrent aphthous stomatitis (RAS) is a common mucosal disease characterized by multiple recurrent, small, round, or oval ulcers with circumscribed margins, erythematous haloes, and a yellow grey base. Although the exact etiology is unknown, various factors can trigger RAS development. **Objectives:** This study aims to determine the prevalence of self-reported RAS and to evaluate the associated risk factors of RAS among dental students. **Material and Methods:** A set of validated questionnaires was distributed among the dental students in the Faculty of Dentistry, UiTM. The questionnaire comprises socio-demographic characteristics, nature of ulcers, risk factors, and treatment modalities. Data obtained from the questionnaire were analyzed using Chi-square statistical test SPSS version 27. **Results:** A total of 299 dental students participated in the questionnaire survey. The prevalence of RAS among dental students was 90.3 %. There was no significant relationship between the socio-demographic background of participants with self-reported RAS. The most common site affected was the buccal mucosa 64.1%, followed by the lips 55.2%. Risk factors frequently associated with RAS are injury (trauma) and stress 47.8% and 28.1%, respectively. Most dental students (69.3%) do not get any treatment to treat their ulcers, and only 1.5% seek treatment from the dentist. **Conclusions:** This study highlights the high prevalence of self-reported RAS among dental students and common risk factors reported associated with the occurrence of RAS. Therefore, this data assists the clinician in identifying common associated risk factors of RAS and subsequently improves management and efficient therapeutics.

Keywords: Recurrent aphthous stomatitis, Prevalence, Dental students, Oral ulcer, Risk factor

IDCMR-16P11

EFFECTS OF A 445 NM DIODE LASER AND SILVER DIAMINE FLUORIDE IN PREVENTING ENAMEL DEMINERALISATION AND INHIBITING CARIOGENIC BACTERIA

Vicky Wen- Qing Xue

ABSTRACT

Objective: To study the effects of a 445 nm diode laser (L) and silver diamine fluoride (F) on preventing enamel demineralisation and inhibiting cariogenic bacteria. **Methods:** Thirty-three enamel slices were sectioned each into four blocks for four groups to receive L with F (LF), F, L and Water (W, control). Ten blocks from each group

were used to evaluate demineralization. Surface morphology, lesion depth and nanohardness of the blocks after pH-cycling were studied by scanning electron microscopy (SEM), nanohardness test, and micro-computed tomography, respectively. Twenty-three blocks per group were used for biofilm assessment. Morphology, viability, and growth kinetics of the *Streptococcus mutans* biofilm were assessed by SEM, confocal laser scanning microscopy, and the counting of colony-forming units (CFUs), respectively. **Results:** SEM images of LF-treated enamel showed an intact surface compared with other groups. Nanohardness (GPa) for LF, F, L and W were 1.43 ± 0.17 , 1.01 ± 0.11 , 1.04 ± 0.13 and 0.73 ± 0.14 , respectively ($p < 0.001$; $LF > F$, $L > W$). Their lesion depths (μm) were 46 ± 8 , 52 ± 6 , 88 ± 13 and 111 ± 9 , respectively ($p < 0.001$; $LF, F < L < W$). SEM showed few bacteria for LF and F compared with other groups. Their dead-live ratio were 1.67 ± 0.13 , 1.60 ± 0.15 , 0.39 ± 0.05 and 0.32 ± 0.05 , respectively ($p < 0.001$; $LF, F > L > W$). Log CFUs for LF, F, L and W were 4.2 ± 0.3 , 4.5 ± 0.2 , 7.9 ± 0.3 and 9.4 ± 0.2 , respectively ($p < 0.05$; $LF < F < L < W$). Two-way ANOVA analysis revealed an interaction effect on nanohardness and Log CFUs between the laser irradiation and SDF treatment ($p < 0.001$). **Conclusion:** This study showed a superior caries preventive effect of a combined treatment of the diode laser and SDF. Because diode laser and SDF are affordable and readily available, clinicians can provide this treatment to their patients for caries prevention. **Clinical significance statement:** Diode lasers are handy, affordable and readily available to clinicians. This study provides information of use of 445 nm diode laser for caries prevention. The laser irradiation hopefully can be added before conventional topical SDF application.

IDCMR-16P08

APPLICATION OF FLUORESCENCE LASERS TO EVALUATE THE EFFICACY OF ARRESTING CARIES WITH SILVER DIAMINE FLUORIDE

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ABSTRACT

Objectives: This clinical trial used fluorescence lasers to assess the effectiveness of Silver Diamine Fluoride (SDF) in preventing active dentin caries in baby teeth. **Methods:** Preschool children aged 3 to 5 years old with at least one active dentin caries lesion were selected from a SOS Children's Village in Vietnam. A total of 32 children with 126 caries lesions were treated with 38% SDF, applied only once. DIAGNOdent pen 2190 - Kavo device and probes were used to evaluate lesions independently at certain timepoints including: before the intervention and 5 minutes, one day, and one week after the intervention. For the evaluation of treatment results, the caries lesions were diagnosed as prevented if their surfaces were hard and difficult to probe or the measured laser index ≤ 20 , while the lesions were assessed as active if they were soft and easy to probe or the measured laser index > 20 . **Results:** Before SDF was applied, all caries lesions had soft dentin and laser indexes > 30 . The average value of laser index measured on lesions was significantly reduced from 88.2 (SD = 9.3) at baseline to 19.6 (SD = 13.7) at one week after intervention ($p < 0.001$, χ^2 test). Based on fluorescence lasers, the caries arrest rates were 80.2%, 73.2% and 70.6% respectively for the post-intervention periods, while the assessment by probes for caries arrest rates were 82.5%, 80.2% and 77.8%, respectively ($p < 0.05$, χ^2 test). The difference between the two methods is due to some caries lesions that are hard on probing but still have laser index > 20 . **Conclusions:** The fluorescence laser device can be applied clinically to assess the effectiveness of preventing caries with SDF, the evaluation results are more accurate than the lesion probe method.

Keywords: Silver diamine fluoride, Fluorescence laser, Caries, clinical trial

IDCMR-16P16

A CLINICAL STUDY ON THE EFFECT OF THE NEW ADHESIVE ORTHODONTIC GATE AUXILIARY APPLIANCE

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ABSTRACT

Background: In clinical practice, it is common that the torque of individual teeth is too large. In other words, the root is located on the lingual side of the alveolar bone, so it is necessary to control the root to the lip side. In view of the shortcomings of traditional appliances and methods, our group has designed and developed a new type of adhesive orthodontic gate auxiliary appliance that can effectively control the root to the lip side. **Objective:** To explore the effect of the new type of adhesive orthodontic gate auxiliary appliance on controlling the root to the lip side. **Methods:** During the treatment with fixed straight wire appliance, We choose the target teeth with excessive positive torque. The new adhesive orthodontic gate auxiliary appliance was used to control the root to the lip side. CBCT images of the target teeth before and after torque control were measured and analyzed. Then, the clinical effect of the new bonded portal auxiliary arch was analyzed. **Results:** The CBCT images showed that the root of the target tooth moved to the ideal position on the lip side, torque control was completed within 1-3 months, the roots of the target teeth were not obviously absorbed, and the height and thickness of alveolar bone were not significantly reduced. The new adhesive orthodontic gate auxiliary appliance arm is about 12-16mm.

Conclusion: The new appliance can effectively control the root of the target tooth turned to labial side. The nickel titanium wire is used to apply force through the extension arm. The force is continuous, gentle and more conducive to the reconstruction of periodontal tissue. The force application point is located at the impedance center of root, and the length of the force arm is 12 times the width of the bracket groove.

IDCMR-16P17

MOLAR INTRUSION BY THE FIXED OCCLUSAL PAD WITH MINISCREW ON INDIRECT ANCHORAGE APPLIANCE

Liu Jiang-Shan

ABSTRACT

Objective: To evaluate the effects and clinical application of molar intrusion with the fixed occlusal pad with miniscrew on indirect anchorage appliance developed by our research group. **Methods:** Patients who needed molars intrusion were selected. To evaluate the effects of molar intrusion, clinical examination, dental model analysis, and cephalometric analysis by Dolphin19.0 software were used before and after intrusion treatment.

Results: All the molars were intruded successfully in an average time of 3-4 months. The direction of molar intrusion achieves vertical intrude. No movement in other directions than planned. There was no significant change in the other teeth and jaw position. No signs of root resorption were observed in CBCT of the intruded mandibular molars. **Conclusion:** The fixed occlusal pad with mini screw on indirect anchorage appliance has an efficient clinical effect in molar intrusion without obvious periodontal tissue damage and root resorption. The miniscrew placement is easy to choose. No movement in other directions than planned. There was no significant change in the other teeth and jaw position.

Keywords: New appliance; Miniscrew; Molar intrusion; Indirect anchorage

IDCMR-16P19

IMAGING OMICS IN THE DIAGNOSTIC STUDY OF TMJOA

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ABSTRACT

Introduction/Background: Temporomandibular joint osteoarthritis(TMJOA) is a kind of common chronic degenerative disease, which can affect the normal work and life of patients. But there is no effective treatment now, early diagnosis and intervention to block its progress is very necessary. **Objective:** The purpose of this study was to develop a diagnostic tool to detect TMJOA from cone beam computed tomography (CBCT) images with imaging omics, in order to provide guidance for clinical treatment. **Methods:** Patients who visited the Affiliated Stomatological Hospital of Kunming Medical University from January 2020 to January 2022, were selected. The patients were defined and classified into 2 groups—TMJOA and normal—according to diagnostic criteria for the TMJOA. The CBCT of the patients were introduced into the sygnio. via software to mark lesions, the relevant imaging omics characteristics were extracted, and the screening model for TMJOA was established and verified. **Results:** A total of 100 side TMJ of patients (75 in TMJOA and 25 in normal group) were marked, 1404 relevant imaging omics characteristics were extracted, and 45 side TMJ of patients (11 in TMJOA and 33 in normal group) were used for model validation. A screening model was developed, and the model algorithm was Zscore_PCC_KW_14_SVM, which included 14 imaging-omics features. The AUC, average accuracy, precision, sensitivity was 0.810,0.773,0.727,0.909,respectively. **Conclusion:** 1. TMJOA screening can be realized through imaging omics methods; 2. The model performance is relatively balanced, but the AUC value is relatively low, which may be related to the small sample size, we need to large the sample size in the future.

Keywords: TMJOA, Imaging omics, CBCT, Screening

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