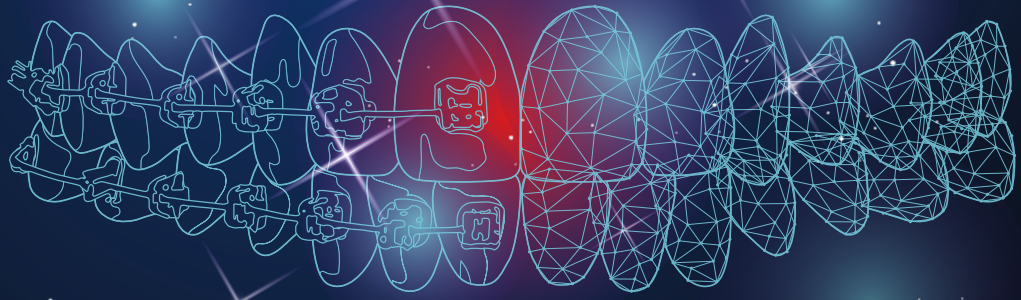
2024
TAO APOC

EMBRACE 3C
CONNECTION, COMMUNICATION & CREATION

37th Annual Meeting of TAO
14th Asian Pacific Orthodontic Congress
5th APOS Residents' Forum

Dec. 2-5, 2024 at TaiNEX 2,
Taipei Taiwan



PROGRAM BOOK

Advisors

NSTC 國家科學及技術委員會 National Science and Technology Council

衛生福利部 Ministry of Health and Welfare

臺北市政府觀光傳播局 Department of Information and Tourism

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2024 TAO APOC Chairman's Message

The Asian Pacific Orthodontic Congress (APOC) is an important biennial academic event. As a member of the Asian Pacific Orthodontic Society (APOS), Taiwan is hosting this congress for the second time. It has been 26 years since the last 3rd APOC in 1998. During this period, orthodontic treatment has undergone many important developments, including the application of orthodontic implant technology (TADs), the popularization and refinement of digital 3D images, which in turn led to digital related treatments assisting in orthodontic planning, orthognathic surgery and clear aligners. Numerous academic research publications also increase the prospects and predictability of orthodontic treatment. How lucky we are to be in this era of After experiencing the submersion of Covid-19, we are the first APOC completely out of the epidemic. The theme of this congress is Embrace 3C: Connection, Communication & Creation. Brace is a powerful tool for orthodontists to treat malocclusion. Through this congress platform to connect with the Asia Pacific and the world, we embrace the progress of orthodontic knowledge and constantly pursue perfection; improve the beauty of teamwork through cross-field communication and extend creative digital orthodontics that leads us to unlimited imagination of the future.taking-off and transformation of orthodontic practice.

The 2024 TAO APOC lasts for 4 days and will be held in Taipei Nangang Exhibition Hall 2. The meeting highlights list as follows:

1. The Residents' Forum on Dec 2 will be co-organized with the 5th Asian Pacific Residents' Forum, open to international submission of papers, to enhance research quality and treatment innovation.

2. For the 3-day congress from Dec 3 to 5, more than 40 important international and domestic professors and lecturers from the world and the Asia Pacific region will be invited to echo the theme of Embrace 3C and provide the richest and most valuable academic feast.

3. "Rising Stars of APOS" provides member states to recommend young orthodontists to give small-scale lectures. The legacy will be passed down from generation to generation and inject new blood into the orthodontic field.

4. The first domestic large-scale orthodontic materials exhibition hall, allowing attendees to participate in a world-class exhibition experience.

5. The APOC Photography Contest provides a stage to showcase the smile aesthetics and art skills.

6. Rich and diverse congress activities, including Residents' night, Welcome party, Gala dinner, and opening and closing ceremonies, to feel the friendship in the APOS big family and the connection with the world.

We sincerely invite you to participate this Congress, and hope you enjoy this well-planned academic conference.

Sincerely,

Dr. Ellen Wen-Ching Ko, DDS, MS

Chaieman of the Organizing Committee, 2024 TAO APOC

TAO President's Message

Dear colleagues and friends,

On behalf of the Taiwan Association of Orthodontists (TAO), I would like to welcome you to the 14th Asia Pacific Orthodontic Congress, the most significant and extraordinary celebration of orthodontics in the region on Dec. 3-5, 2024 in Taipei. In the meantime, it has been pleasurable for TAO Annual Meeting to concur with APOS's events and rolled out meetings with the deliberate theme - "Embrace 3C Connection, Communication & Creation". We hope that all delegates from affiliate societies of APOS will reunion again in this beautiful island as the third APOC was once celebrated here in 1988. We also hope all attendees will get up-to-date professional knowledge and skills through participating various planned, delicate activities.

As a host society, Taiwan of course will show its attractive features and cultural uniqueness to the participants while they dive deeper into the island everywhere. No matter where they go in Taipei, the enchanting landscapes, rich cultural heritage, advanced technology and a melting pot of culinary delights can ensure visitors to be awarded with a rich and wonderful experience.

Therefore, I encourage all of you to attend the APOC and TAO Annual Meeting 2024 in Taipei. We believe that every attendee's participation and support have been indispensable of contributing more insights to our specialty and making it more uplifted in the upcoming years.

Respectfully submitted,

Dr. Chen-Feng Cheng

President, Taiwan Association of Orthodontists

Organizing Committee

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Vice Chairperson
Kelvin Wen-Chung Chang

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Heng-Ming Mark Chang

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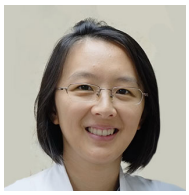
Yu-Jia Liou



Director of Residents' Forum
Tzu-Ying Wu

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Yuh-Jia Hsieh

Director of Gala Ceremony
Tzu-Hang Hsu

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Yu-Ling Huang

Director of Publicity Committee
Wen-To Cheng

Treasurer
Hui-Chen Tsai

Director of I.T. Committee
Yu-Jen Chang

Director of Photography Contest
Ming-Hsien Lan

Program

	Dec. 3	
Time/Venue	**701AE**	**701DH**
08:00-09:00	Registration	
09:00-09:30	**[APOS Oration]** Kelvin Wen-Chung Chang **Bryce Lee** APOS and Orthodontics—Our Past and Our Future	
09:30-10:00	**[Opening Ceremony]**	
10:00-10:30	Coffee Break	
10:30-12:15	**[Connection I]** Roberto Tan/ Richard Chen-Feng Cheng **Ravindra Nanda** Aligner Orthodontics—Are We Practicing Evidence Based Treatment?	**[Connection II]** Kieran O'Neill/ Ellen Wen-Ching Ko **Flavia Artese** Gamechangers in Anterior Open Bite Treatment
	Takashi Ono Challenges with Japanese Ni-Ti archwires: Past, Present and Future	**Adith Venugopal** Vertical Control and Achieving Excellent Facial Esthetics: Connecting the Dots!
	Panagiotis Skoularikis New Advancements & NiTi Gadgets in Retraction Cases	**Ellen Wen-Ching Ko** Sequence of Management and Treatment Boundary in Deep Bite Correction
12:15-13:15	Lunch	**[Sponsored Lecture]** Yi-Jun Hung **Shinichi Narita** The Challenge of Shortening Orthodontic Treatment Duration
13:15-15:00	**[Connection III]** Nikhilesh R. Vaiid/ Eric Jein-Wein Liou **Letizia Perillo** Non-extraction Treatment in Mixed Dentition Patients: Rationale and Long-term Stability	**[Connection IV]** Nguyen Thi Thu Phuong/Wen-Ken Tai **John Jin-Jong Lin** The Applications of CBCT in Tooth Autotransplantation and Ortho-Perio Synergy to Enhance Function and Esthetics
	Eric Jein-Wein Liou Bite raisers: game changer for non-surgical orthodontic treatment in mandibular asymmetry or Class II adult patients	**Johnny Joung-Lin Liaw** Recycling Orthodontics Optimized with TADs, IDT and Improved Autotransplantation Protocol
	Johnson Hsin-Chung Cheng The Smile Esthetic Consideration and Implication in Orthodontic Diagnosis and Treatment	**Leslie Yen-Peng Chen** Alternative Approach to Complicated Case
15:00-15:30	Coffee Break	

Time/Venue	701AE	701DH
15:30-17:00	**[Communication I]** Tanan Jaruprakorn/ Jia-Kuang Liu **Nikhilesh R. Vaiid** Molar Incisor Hypomineralization (MIH): The "Why, What and How" of Decision Making for Orthodontists!	**[Communication II]** Wei Lin/ Ming-Jeaun Su **Chai Kiat Chng** Surgery First Management of Cleft and Craniofacial Patients
	Chris Chang Tough Impaction Made Easy	**Seung-Hak Baek** Problems Encountered During Orthognathic Surgery and Surgical Orthodontic Treatment in Class III Patients
	Poonsak Pisek The Challenges of Severely Impacted Teeth and How to Manage it	**Keiji Moriyama** Key Considerations in the Treatment of Patients with Mandibular Prognathism and Facial Asymmetry
17:00-18:00		**TAO General Assembly**
18:30-20:30	Welcome Party (Invited Only)- Jianguo Brewery	

	Dec. 4	
Time/Venue	**701AE**	**701DH**
08:00-09:00	**Registration**	
09:00-10:30	**[Communication III]** Prashant Zaveri/Chi-Wen Chen **Sumit Yadav** Maxillary expansion with MARPE: Pros and Cons **Rachel Yang-Lim** Tips and Tricks for a Successful Clear Aligner Treatment **N.R. Krishnaswamy** Class III Corrections—Stirred a New with Evidence	**[Communication IV]** Maria Joanne Marañon/Chia-Tze Kao **Valmy Pangrazio-Kulbersh** Treatment of Facial Asymmetries from Early Childhood to Adulthood **Simon J Littlewood** Three Controversies in Orthodontic Retention: No Retainers, A Biological Approach to Reducing Relapse & Remote Monitoring
10:30-11:00	Coffee Break	
11:00-12:30	**[Creation I]** John D. Callahan/ Yu-Kun Chih **Kenji Ojima** Possibility of Shape Memory Aligner—Next Generation Aligner Orthodontics **Jae Hyun Park** Various Clinical Applications of TADs and Clear Aligners in Contemporary Orthodontics	**[Creation II]** Jong-Ghee Kim/Ching-Huei Horng **Nearchos C. Panayi** From thermoformed to Printed Aligners: Optimization of the Process **Kee-Joon Lee** Digital Workflow for Critical Decision Making
12:30-13:30	**[Sponsored Lecture]** Shih-Jaw Tsai **Alessandro Mario Greco** Digital Orthodontics with Invisalign Aligners: the Power of Less	Lunch
13:30-15:00	**[Creation III]** Shalene Kereshanan/Ming-Hsien Lan **Norehan Mokhtar** The Role of Artificial Intelligence in Orthodontics: Clinical Applications and Future Trends **Wilson Lee** From CAD/CAM Custom Made Lingual Appliances to Direct 3D Printed Aligner Seoulalign, Where Are We Now? **Simon Graf** Transformation of Classic Orthodontics in the Digital Area, from 3D Metalprinting, Virtual Planning to Direct Printed Aligners	**[Creation IV]** Somchai Satravaha/ Johnson Hsin-Chung Cheng **Kelvin Wen-Chung Chang** Embrace 3C—A golden age of orthodontics! **Koutaro Maki** Development of New Digital Simulation of Tooth Movement, and Intraoral Sensor System for Biological Information **Seong-Hun Kim** MARPE A to Z: The ATOZ
15:00-15:30	Coffee Break	

<table>
<tr><th>Time/Venue</th><th>701AE</th><th>701DH</th></tr>
<tr><td rowspan="4">15:30-17:00</td><td rowspan="2">[Special Lecture]
Chih-Chen Chou/Huei-Mei Tsai
Alessandro Mario Greco
Functional Aligner Treatment in Growing Patients</td><td>[Rising Stars of APOS I]
Koo Chieh Shen/Shih-Ping Lu
Oyku Dalci
The Use of Artificial Intelligence Supported Remote Monitoring in Different Orthodontic Applications, from Interception to Retention</td></tr>
<tr><td>Shinhuei Wang
Striving for Balance Between Sagittal and Vertical Dimensions In Orthodontics- The “Perfect Pitch” for Profile, Smile and Airway</td></tr>
<tr><td>Vas Srinivasan
Why Spark? The Efficacy of Spark Clear Aligner on Extraction Cases Treatment</td><td>Zolzaya Bodikhuu
Influence of Malocclusion Types on the Quality of Life, Anxiety, and Depression of the Mongolian Population</td></tr>
<tr><td>Pushkar Manandhar
In Search of Divine Face</td></tr>
<tr><td>18:00-20:30</td><td colspan="2">Gala Dinner (Ticket for Purchase)-Grand Hilai Taipei</td></tr>
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	Dec. 5		
Time/Venue	**701AE**	**701DH**	**Grand Hilai Taipei**
08:00-09:00	Registration		APOS President Breakfast Meeting
09:00-10:30	**[TAO Annual Meeting I]** Chiung-Shing Huang/Yu-Ling Huang **Heng-Ming Mark Chang** Mandible Rotation? Think of Goal-orientated Aesthetic Treatment (GOAT) First!	**[Rising Stars of APOS II]** Shigeru Murai/Wei-Yung Hsu **Viet Hoang** Applications of 3D Printing Technology in In-house Clear Aligner Fabrication	**[APOS AGM]**
	Yi-Jyun Chen 3C in Early Orthodontic Tx	**Chidsanu Changsiripun** A 'Jack-of-all-Trades' Orthodontist: Keener to Master Case Reports, Systematic Reviews, and Everything In Between	
	Cheng-Tsung Huang Innovative Approach of CAD/CAM Technology in Invisible Orthodontics	**Yi Lin Song** SMILE (Specialized Mixed-reality Innovative Learning Experience) for Miniscrew Implant Insertion in Orthodontics	
		Maria Lourdes Torres-Garcia Embracing the 4th C: Caring to be a Comprehensive Orthodontist - Revelations Beyond My Research on Benzalkonium Chloride	
10:30-11:00	Coffee Break		
11:00-12:30	**[TAO Annual Meeting II]** Hajime Suyama/Pao-Chang Chiang **Li-Fang Hsu** MARPE: Redefining Class III Non-surgical Treatment	**[Rising Stars of APOS III]** Shouichi Miyawaki/Yu-Chuan Tseng **Kieran Daniel Tsang** Orthodontic Management of Impacted Teeth	
	Michael Yu-Jen Chang Perspectives on Craniofacial Anomalies: Challenges and Solutions	**Kyung-A Kim** Innovative True 3D Digital Setup for Camouflage Treatment of Class II Malocclusion: Emphasizing Mandibular Position	
	Sabrina Chiung-Hua Huang Tough Case Made Easy	**Wan Nurazreena Wan Hassan** Gaze Behaviour Towards Dental Aesthetics and Psychosocial Well-Being: Evidence to the Use of a Sociodental Approach in the Assessment of Orthodontic Treatment Need	
		MSK Adiwirya (IAO) Extraction Pattern in Orthodontics: The Unusual Strategy	
12:30-13:30	Lunch		

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<tr><th>Time/Venue</th><th>701AE</th><th>701DH</th><th>Grand Hilai Taipei</th></tr>
<tr><td rowspan="4">13:30-15:00</td><td rowspan="2">[TAO Annual Meeting III]
CD Tran/Ying-Kwei Tseng
Tzu-Ying Wu
Optimizing Strategies for Effective Problem Solving in Impacted Molar Uprighting</td><td>[Rising Stars of APOS IV]
Endah Mardiati/Chung-Hsing Li
Ria Kinjo
Accelerate Orthodontic Tooth Movement</td><td rowspan="5"></td></tr>
<tr><td rowspan="2">Hrushikesh Aphale
Resolving the Conundrum of Maxillary Anterior Temporary Skeletal Anchorage: Understanding the Biomechanics and Force Vectors for Maxillary Incisor Intrusion</td></tr>
<tr><td>Sam Sheng-Pin Hsu
Seamless Connection, Effective Communication, and Comprehensive Creation in Surgical Orthodontic Treatment</td></tr>
<tr><td>Mei H'uah Chin
Mandibular Advancement Appliance—Therapeutic Position and Titration</td></tr>
<tr><td>Richard Chen-Feng Cheng
Mindset of Anterior Teeth Movements for Esthetic Planning in Hyperdivergent Face</td><td>Dashrath Kafle
Tough Talk: Exploring The Benefits of Clear Aligner Therapy Over Conventional Orthodontic Appliances</td></tr>
<tr><td>15:00-15:30</td><td colspan="2">Coffee Break</td></tr>
<tr><td rowspan="3">15:30-16:30</td><td>[Special Lecture]
Bolormaa Sainbayar/Chi-Yang Tsai
Khaled Samir AboulAzm
Challenging Different Types of Teeth Transposition with Simplified Mechanics</td><td>[Rising Stars of TAO]
Dashrath Kafle/Tai-Ting Lai
Sheng-Chin Lin
“HPPG” Technique: Easy and Efficient Mechanics for Treating Gummy Smile and Hyperdivergent Faces</td></tr>
<tr><td>[Rising Stars of TAO]
Shih-Hsuan Lin
To Preserve or Not? Orthodontic Treatment to Impacted Teeth</td><td>De-Shing Chen
Using New Tools, But Keep the Old. One is Silver; the Other is Gold</td></tr>
<tr><td>16:30-17:00</td><td>[Closing Ceremony]</td><td></td></tr>
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Speakers' Abstracts

Dr. Bryce Lee

1. Department of Orthodontics and Paediatric Dentistry, Faculty of Dentistry, National University of Singapore, Singapore
2. Private Practice - Atria-City Dental Group, Singapore

APOS and Orthodontics – Our Past and Our Future

Orthodontics has served us well. It is our profession, our provider, our love and our life. 2 aspects of orthodontics go hand in hand. Our institutions and our education. One cannot go without the other. This discussion revolves around both.

APOS is an institution that encompasses the affiliate societies of the region. We represent the largest region in the world. Its representation in the World Federation of Orthodontists is the largest. I will discuss its origin, its importance and its future.

Heraclitus, the pre-socratic Greek philosopher states that the "only constant in life is change". Our profession is no different. Because "When you are finished changing, you are finished" – Benjamin Franklin. The education and trends in orthodontics evolves because of trend setters and innovators. We embrace such change or retire. I will discuss the orthodontics of today and what I think the future will bring us. The cost of time, greater demands from our patients, economics are important needs for change. These, along with our patient's wellbeing and environmental factors, must be our concerns for the future.

Dr. Ravindra Nanda

1. Prof. Emeritus, University of Connecticut, Department of Orthodontics, Farmington, USA
2. Adj. Professor, The ADA Forsyth Institute, Cambridge, USA

Aligner Orthodontics - Are We Practicing Evidence Based Treatment?

Over the last 20 years aligners have become integral part of orthodontic treatment. Only in recent years studies have reported issues related to efficacy of various orthodontic movements.

Without peer reviewed background studies, treatment modalities have been introduced by major aligner companies to achieve palatal expansion, treatment of sleep apnoea in infants, and mandibular advancement devices. Another example is various designs of attachments. This presentation will discuss the current literature and shape memory aligners which are being introduced after numerous evidence based studies.

Dr. Takashi Ono

Professor and Chairman, Department of Orthodontic Science, Graduate School, Institute of Science Tokyo, Japan

Challenges with Japanese Ni-Ti archwires: Past, Present and Future

It has been more than 40 years since we developed a prototype of the Japanese Ni-Ti archwires at Tokyo Medical and Dental University. In the beginning, difficult cases were treated ingeniously, considering the force system with the extraoral anchorage appliances; with the advent of temporary anchorage devices, the boundaries of orthodontic tooth movement moved away. With another advent of cone-beam computer tomography, the morphological features of the jawbone that restrict tooth movement have become clear in three dimensions. In the near future, orthodontists' wisdom must be put to work to overcome anatomical barriers. The era of "making use of what we have" has given way to the era of "making what we want to have". In this lecture, I would like to overview the past and present of the orthodontic treatment using the archwire, and introduce a new technology that, if applied to orthodontic treatment in the near future, has the potential to once again expand the limits of orthodontic tooth movement.

Dr. Panagiotis Skoularikis

Vice-President, World Federation of Orthodontists

New Advancements & NiTi Gadgets in Retraction Cases

Retraction of incisors and canines is a common orthodontic procedure in premolars extraction cases. The purpose of this lecture is to introduce solutions for canine and incisors retraction. Biomechanical considerations regarding retraction mechanics are explained. The treatment objectives are bodily tooth movement and a healthy periodontal condition. In order to achieve these objectives, a proper biomechanical approach is necessary. When combining Nickel-Titanium (NiTi) materials with Stainless Steel elements while following the appropriate mechanical principles, incisors and canines can be retracted successfully, and without any reactivation. Compound retraction archwire for the front teeth, as well as canine retraction springs will be presented.

The aims of this study are to describe the mechanical characteristics of these archwires and present their clinical application in premolar extraction cases following the segmented archwire technique. The use of such archwires and springs yields the following advantages:

1. Problem-free adaptation to the patient's individual situation.

2. The use of both the compound retraction archwire and the canine retraction springs produces a bodily movement during the retraction of the incisors and the canines respectively.

3. Vertical control of the front teeth or the canines during retraction is possible by choosing various bending configurations at the steel portion.

4. No undesirable side effects reported.

5. Moderate and almost constant moments and forces are being applied.

6. No reactivation is necessary.

Learning Objectives:

- Explain the basics in retraction mechanics
- Demonstrate usage of superelasticity for continuous retraction
- Illustrate various bending configurations, in order to achieve vertical control of the retracted teeth
- Describe the main advantages in using NiTi-stainless steel archwires and springs

Dr. Flavia Artese

Professor, Department of Orthodontics,
Rio de Janeiro State University, Brazil

Gamechangers in Anterior Open Bite Treatment

Open bite treatments are challenging due to its high rate of relapse. The literature presents many researches on this subject, but with controversial information. There are disagreements on the definition of open bite, its etiology and types of treatment. Possibly, the lack of consensus on the etiology of the anterior open bite may have led to different types of treatment and can be the explanation for the high level of relapse of this malocclusion. Function has a primary role in open bite stability, but other factors are of utmost importance to achieve an adequate and esthetic occlusion. With this in mind, the purpose of this lecture is to discuss how dental, skeletal and functional aspects should be considered in treatment planning, as well as the impact of different types of orthodontic appliances on clinical results.

Dr. Adith Venugopal

Senior Lecturer, Discipline of Orthodontics, Department of Oral Sciences, Faculty of Dentistry, University of Otago, New Zealand

Vertical Control and Achieving Excellent Facial Esthetics: Connecting the Dots!

In this lecture, I will delve into the intricate relationship between molars' vertical positioning and final facial aesthetics. With approaches involving TADs, I will demonstrate innovative methods for managing vertical dimensions, rotating occlusal planes, and ensuring optimal final esthetics. Emphasis is also placed on biomechanical strategies to flatten deep curve of Spee in various facial patterns, highlighting its profound impact on vertical dimensions. Furthermore, delving into the nuanced topic of smile esthetics, offering a biomechanical approach to treatment, be it a gummy smile in Class II or limited upper incisal display in Class III patients. Also, deliberate counterclockwise rotation of the mandible in Class II patients with a steep mandibular plane to achieve ideal facial proportions will be discussed. Scientific evidence underscores each aspect, providing a comprehensive understanding of the biomechanical considerations essential to achieving optimal facial esthetics.

Dr. Ellen Wen-Ching Ko

1. Professor, Graduate Institute of Dental and Craniofacial Science, Chang Gung University, Taoyuan, Taiwan
2. Professor, Department of Craniofacial Orthodontics, Chang Gung Memorial Hospital, Taipei, Taiwan

Sequence of Management and Treatment Boundary in Deep Bite Correction

Deep overbite is defined as an increase vertical overlap of more than 5 mm or 50% of the incisors that are perpendicular to the occlusal plane. The development could be dentoalveolar and/or skeletal origin. Factors that associate with deep bite development could be facial growth, oral function, incisor overeruption, and hypodontia. The most common malocclusion type related to deep bite is skeletal Class II malocclusion. The aim of orthodontic treatment is to reduce traumatic dental wear, prevent tissue trauma, align dental space for proper dental restoration, and establish vertical occlusal support in cases with missing teeth.

Proper diagnosis of the problems related to deep bite would guide the treatment mechanics properly. The checking list includes facial pattern, sagittal jaw relation, vertical jaw relation, dentoalveolar height in each jaw at either anterior and posterior regions, maxillary smile line, pattern of upper gingival display, anterior teeth inclination and curve of Spee, etc. An exaggerated curve of Spee, overeruption of maxillary incisors, and decreased gonial angle were considered the major contributing components for deep bite formation.

In adolescence, differential molar extrusion with the path of mandible growth could reduce the overbite. However, anterior teeth intrusion might be more effective in adult patients. Orthognathic surgical intervention might be considered for cases with large sagittal jaw discrepancy and facial asymmetry.

Sequential bonding might be required if there is no space for lower teeth bonding. In Class II patients, start with maxillary leveling and partial anterior intrusion helps to provide space for lower bonding with the aid of posterior bite turbo or maxillary removable plate. Expansion of the lower arch and leveling the curve of Spee would benefit to open the bite and correct the Brodie bite (in-locking cross bite) in some severe cases. Once the ovejet is reduced, anterior bite turbo at maxillary anterior teeth could assist to increase molar extrusion and further reduce the overbite. Adequate maxillary anterior palatal root torque would be advantageous to establish proper interincisal angulation and stable anterior contact. The temporary anchorage devices (TADs) could be applied in cases requiring sagittal occlusal correction and upper or lower anterior intrusion.

The relation between temporomandibular disorder (TMD) and deep bite is still not conclusive. Deep bite patients are frequently reported as having nocturnal and diurnal clenching with jaw stiffness. A deep bite, in particular with retroclined upper incisors, can represent a risk factor for TMD. On the other hand, a recent report indicated the deep bite may be related to dental wear but not to pain from TMD and/or disc displacement.

The retention after correction of deep bite could combine lower fixed retainer and maxillary removable anterior bite plane to keep the overbite. The stability of lower incisor intrusion and proclination was considered acceptable stability in the long term. The prevalence of vertical relapse in deep bite was around 10%. The long-term observation indicated that the cases were prone to relapse if the overbite was partially corrected. Complete correction of overbite and ensuring appropriate interincisal angle with proper post-treatment retention could prolong the occlusal stability.

Dr. Letizia Perillo

Head, Orthodontic Division, Multidisciplinary Department of Medical, Surgical, and Dental Specialties of the University of Campania Luigi Vanvitelli, Napoli, Italy

Non-extraction Treatment in Mixed Dentition Patients: Rationale and Long-term Stability

Orthodontists make every possible effort to create full smiles, and non-extraction treatments are becoming increasingly popular among patients. However, dimensional changes of the dental arch tend to relapse, and this instability is one of the main reasons why non-extraction treatment remains an open question.

Key factors in choosing between extraction and non-extraction are mainly the amount of crowding and aesthetic concerns. Therefore, non-extraction treatment is indicated in patients with moderate crowding who may benefit from increased lip support.

This presentation focuses on the rationale of non-extraction treatment and its long-term stability.

Data were collected from dental models and lateral cephalograms of patients treated consecutively with a non-extraction approach, Trans-palatal arch (TPA) in the upper arch and Lip Bumper (LB) in the lower arch, during the mixed dentition phase followed by fixed appliances in the permanent dentition and recalled after an average follow-up of 6 years.

Arch-widths, perimeters, and lengths, as well as crowding and incisor proclination were assessed and compared with those of a matched untreated control sample, at the start of treatment, after non-extraction treatment, after fixed appliance treatment and at the follow-up.

In the treated group, after the non-extraction treatment phase with TPA and LB, the arch-widths and perimeters increased significantly while crowding was significantly reduced in both the upper (90%) and lower (80%) arch.

After the fixed appliance treatment, only small increases in arch-widths and perimeters were reported, and crowding was completely corrected in both upper (10%) and lower (20%) arch. Arch length increases and incisor proclinations did not contribute to the crowding correction.

At the follow-up, arch widths and perimeters remained mainly stable, showing only a slight decrease associated with a small increase in crowding, maximum 0.5-mm, considered clinically irrelevant.

The best predictors of relapse and long-term stability were also evaluated. The best predictor of relapse was the amount of crowding before treatment, confirming the need to avoid non-extraction treatment in patients with severe crowding

The best predictors of stability were the increase in intermolar and interpremolar widths, suggesting that the best way to gain space in mixed dentition is by transversal arch expansion.

Moreover, the percentage of crowding relapse at the follow up in the upper (10%) and lower (20%) arch was equal to the respective percentage of crowding correction achieved during the treatment with fixed appliances. This means, in my opinion, that what really remains stable is what we get during the first phase of non-extraction approach, that is before braces, when the deciduous teeth can move spontaneously more buccally, and permanent teeth can erupt directly more buccally.

Dr. Eric Jein-Wein Liou

Associate Professor, Department of Craniofacial Orthodontics and Graduate Institute of Dental and Craniofacial Science, Chang Gung University, Taiwan

Bite Raisers: Game Changer for Non-surgical Orthodontic Treatment in Mandibular Asymmetry or Class II Adult Patients

Occlusal splints stabilize occlusion and reposition mandibular condyles in patients with TMD. Similar to occlusal splints, orthodontic treatment together with bite raisers establish new occlusion and reposition mandibular condyles. Bite raisers could be a game changer in orthodontics. Through meticulous evaluation and assessment on condyle position, they could be applied for improving mandibular asymmetry without orthognathic surgery, especially in facial asymmetry patients due to condyle displacement. They also could be applied in Class II D1 or D2 patients for improving chin projection and facial profile by forward repositioning of the mandibular condyles. In this presentation, the rationale of bite raisers and their application for facial asymmetry or Class II mandibular retrognathism, and the clinical procedures, and assessments of treatment will be presented.

Dr. Johnson Hsin-Chung Cheng

1. Dean and Professor, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan
2. Director, Department of Orthodontics, Taipei Medical University Hospital, Taipei, Taiwan

The Smile Esthetic Consideration and Implication in Orthodontic Diagnosis and Treatment

Orthodontic treatment improves misaligned teeth, the upper and lower jaw relationship, and facial soft tissue. However, creating a harmonious and beautiful smile has become a critical need and key for patients. Because whether a smile looks good is a subjective and abstract consensus, this report will first present the author's large-scale smile research of Taiwanese people and propose what a beautiful smile is. The conclusion is that under the normal physiology and shape of the facial and jaw bones, the greatest common divisor of people's preferences for smiles is a beautiful smile. We also provide Taiwanese people's preference data and a clinical smile chart for reference. Next, the author will discuss the relationship between different malocclusions and smiles and present relevant SCI papers published on smile research in the past for discussion. Different horizontal vector (such as overjet, ANB...) and vertical vector (such as overbite, FMA...) factors for different malocclusion cases impact the smile during orthodontic treatment. Research on two-dimensional and

three-dimensional smiles shows that in clinical orthodontic diagnosis and treatment planning, one cannot only focus on frontal smiles but also ignore the importance of lateral and oblique smiles. In this report, the considerations of smiles for corrective diagnosis and treatment of various malocclusion cases, such as open bite, deep bite, crossbite, protrusive teeth, etc., are explained and discussed.

Dr. John Jin-Jong Lin

Clinical Professor, Department of Orthodontics, Taipei Medical University, Taiwan

The Applications of CBCT in Tooth Autotransplantation and Ortho-Perio Synergy to Enhance Function and Esthetics

In orthodontics extraction is a common method to relieve dental crowding or protrusion, even though nowadays due to the use of TADs the extraction rate is much lower than before, extraction is still needed in some occasions.

Extraction of the 3rd molars used to be a routine procedure on the post ortho follow up patients. Unless there are caries , space deficiency, pericoronitis etsc ..problems, if the 3 rd molar are well aligned, there is no need to remove it.Especially in the mutilated dentition, by auto tooth transplantation the 3rd molar can replace the poorly prognosis molar .

Not only the 3rd molar, whenever the extraction is indicated, the use of the extraction tooth for auto tooth transplantation should always be considered to avoid the waste of a good tooth.

With the modern CBCT imaging, the 3D print of the donor tooth for auto tooth transplantation is very useful for checking the recipient site, so the PDL of the donor tooth can be preserved well to increase the success rate of transplantation.

Auto tooth transplantation is much better than the dental implant, the former is more economic in price, can grow bone, can be orthodontically moved.

Before routine extraction of tooth, should always think about the possibility of auto tooth transplantation to avoid waste of the good tooth.

In this presentation, plenty of cases will be used to demonstrate the role of orthodontist in auto tooth transplantation.

Dr. Johnny Joung-Lin Liaw

1. Adjunct Clinical Instructor, Orthodontic department, National Taiwan University Hospital, Taiwan
2. Director, Beauty Forever Dental Clinic, Taiwan

Recycling Orthodontics Optimized with TADs, IDT and Improved Autotransplantation Protocol

The inherent risk of failure once made tooth autotransplantation an unpopular option for replacing missing teeth. However, with contemporary understandings of biology, advancements in digital technology, and improved standard protocols, the success rate of autotransplantation has increased significantly. With the future occlusion in mind, temporary skeletal anchorage devices (TSADs) provide reliable support for essential orthodontic tooth movement, setting the stage for autotransplantation procedures. A meticulous interdisciplinary approach further refines treatment outcomes. Compared to dental implants, autotransplants are a form of biological replacement with a normal periodontal ligament (PDL). This allows the transplanted tooth to move with orthodontic forces and erupt alongside neighboring teeth. The presence of the PDL also facilitates the formation of alveolar bone and tends to result in a normal gingival papilla. Autotransplantation plays a crucial role in the concept of recycling orthodontics, significantly broadening the range of available treatment options for patients. By understanding biological principles, adhering to standard protocols, and meeting all requirements, the predictability of treatment success can be greatly enhanced. To optimize recycling orthodontics with tooth autotransplantation, collaboration among various specialties is essential, including orthodontists, endodontists, periodontists, prosthodontists, and implantologists.

Dr. Leslie Yen-Peng Chen

Orthodontist, Icon Dental Specialties Clinic, Taiwan

Alternative Approach to Complicated Case

In this section, first the author would like to share clinical experience using 3D printed model for direct mechanical design treating translation/eruption disorders in more predictable way. Second the application of digital surgical simulation/communication treating severe skeletal discrepancies will be presented.

Dr. Nikhilesh R. Vaiid

1. President, World Federation Of Orthodontists
2. Editor in Chief, Seminars in Orthodontics

Molar Incisor Hypomineralization(MIH): The "Why, What and How" of Decision Making for Orthodontists!

MIH presents one of the most significant clinical challenges in orthodontics today, with its complex etiology, variable presentation, and profound impact on enamel homeostasis. Using Simon Sinek's "Golden Circle" method, we can systematically explore the implications of MIH in our practice, guiding us from understanding to actionable solutions.

Why should we, as orthodontists, focus on MIH? Because it's a prevalent condition, affecting up to 40.2% of the global population, with the potential to derail our treatment outcomes. MIH isn't just about discolored enamel; it's about increased caries risk, hypersensitivity, and higher rates of restorative failures. Understanding MIH is not optional—it's critical.

What does this mean for us? It means recognizing the phenotypic variability of MIH and understanding its profound impact on patients' oral health-related quality of life (OHRQoL). MIH affects not only the function but also the social and psychological well-being of our patients, especially when anterior teeth are involved. In orthodontic treatment, MIH complicates bonding, banding, and restoration protocols—raising the stakes in every case we manage.

How do we tackle MIH effectively? By implementing practical guidelines for orthodontic management, including precise diagnostic considerations, tailored restoration strategies, and carefully planned first permanent molar (FPM) extractions. Strategic planning is essential to prevent complications like mesial drift, over-eruption, or space loss. Often, a multidisciplinary approach is required. Long-term monitoring and patient-centered care are the cornerstones of managing MIH-affected teeth, reminding us that our clinical protocols must evolve with the condition.

This lecture will traverse the MIH terrain with actionable clinical guidelines.

Dr. Chris Chang

Founder, Beethoven Orthodontic Center and Newton's A Inc, Taiwan

Tough Impaction Made Easy

Tooth impaction is a common problem in our clinical practice. Eruption and management of impacted teeth require carefully designed surgical procedures and orthodontic treatment. This lecture will detail some of the most common types of impaction cases, including maxillary central incisors and impacted canines(both labially and palatally), and Mandibular canines, premolars and molars, and their recommended course of surgical as well as orthodontic treatment. An innovative, minimally invasive surgery, the VISTA technique, that can shorten the treatment time and best preserve the keratinised gingiva, will be introduced. Buccal shelf screws, combined with 3-D lever arms are proposed as an ideal mechanical design will also be introduced.

Dr. Poonsak Pisek

Associate Professor, International College of Dentistry Walailak University, Thailand

The Challenges of Severely Impacted Teeth and How to Manage it

The management of severely impacted teeth necessitates a multifaceted approach. Blending clinical insight, advanced technology, and biomechanics is crucial in guiding tooth movement and multidisciplinary collaboration. By sharing clinical experiences and innovative strategies, this presentation aims to enhance understanding and provide valuable guidance for clinicians confronting the challenges of impacted teeth, ultimately improving patient satisfaction and treatment success.

Dr. Chai Kiat Chng

Head and Senior Consultant, Cleft and Craniofacial Dentistry Unit/ KK Women's and Children's Hospital, Singapore

Surgery First Management of Cleft and Craniofacial Patients

Surgery First Management is an innovative approach in the treatment of cleft and craniofacial disorders that emphasizes early surgical intervention. The primary goal is to address functional and structural issues as soon as possible, often before traditional orthodontic treatments or other preparatory measures. This approach is particularly relevant in managing complex cases where rapid intervention can significantly improve outcomes.

Key Elements

1. Multidisciplinary Team: Successful implementation requires a coordinated effort from a multidisciplinary team, including surgeons, orthodontists, speech therapists, and other specialists. This team works together to plan and execute the surgical and post-surgical care, ensuring comprehensive management of the patient's needs.

2. Functional and Aesthetic Outcomes: By focusing on early surgery, the Surgery First approach aims to enhance both functional and aesthetic results. Early intervention can lead to improved speech development, better oral function, and more favorable facial aesthetics, which can be crucial for a patient's overall well-being and quality of life.

3. Streamlined Treatment Plan: This management strategy often involves a streamlined treatment plan that minimizes the need for prolonged orthodontic treatment or additional surgeries. By addressing primary issues early on, the approach can reduce the overall complexity and duration of treatment.

4. Long-term Monitoring and Adjustments: Following the initial surgeries, patients typically require ongoing monitoring and potentially additional treatments. The Surgery First approach includes long-term follow-up to assess the results of the initial surgeries and to make any necessary adjustments to the treatment plan.

Benefits and Considerations:

•Benefits: Early surgical intervention can lead to improved functional outcomes, reduced need for later interventions, and enhanced quality of life. Patients often experience more predictable progress and better overall results.

•Considerations: This approach requires careful planning and coordination among various specialists. It may not be suitable for all patients, and the potential risks and benefits should be thoroughly evaluated on a case-by-case basis.

The Surgery First Management approach represents a shift toward more immediate intervention in the treatment of cleft and craniofacial conditions, with the aim of achieving optimal outcomes through early, targeted surgical care

Dr. Seung-Hak Baek

Professor, Department of Orthodontics, School of Dentistry,
Seoul National University, Korea

Problems Encountered During Orthognathic Surgery and Surgical Orthodontic Treatment in Class III Patients

According to the results of a 2017 study, the number of Class III patients who underwent orthognathic surgery at Seoul National University Dental Hospital (SNUDH) exceeded 200 cases per year. However, many patients visit SNUDH for consultations regarding re-operation after having orthognathic surgery performed at other hospitals. The main reasons for seeking re-operation consultations are residual or newly developed facial asymmetry, dissatisfaction with the exposure of the maxillary incisors, and prominence of the mandible, chin, maxilla, and paranasal areas.

As clinicians, we should be aware of the common side effects of orthognathic surgery and surgical orthodontic treatment. However, there are numerous factors to consider during diagnosis, surgical planning, and the surgical procedure itself. Therefore, the purpose of this presentation is to review the mistakes and problems encountered during diagnosis, the decision-making process for surgery or non-surgery, surgical planning, the surgical procedure, and the surgery-first approach, as well as to discuss how to avoid or minimize the aforementioned issues related to orthognathic surgery.

Dr. Keiji Moriyama

Professor and Chairman, Department of Maxillofacial Orthognathics
Graduate School of Medical and Dental University,
Institute of Science Tokyo, Japan

Key Considerations in the Treatment of Patients with Mandibular Prognathism and Facial Asymmetry

In patients with mandibular prognathism complicated by facial asymmetry, craniofacial structures exhibit bilateral differences in size and morphology. These patients typically seek correction not only of their occlusal alignment but also of their facial appearance.

Our recent studies have shown that patients with asymmetric mandibular prognathism demonstrate asymmetrical morphology of the condyles and glenoid fossae, which is closely related to functional asymmetry in condylar movement. Additionally, asymmetric perioral muscle movement during the articulation of bilabial sounds has been found to correlate with the degree of skeletal mandibular deviation.

In our retrospective study of patients with asymmetric mandibular prognathism who underwent surgical orthodontic treatment, we observed significant changes in both hard and soft tissues, effectively addressing skeletal and

occlusal disharmonies. However, mandibular relapse persisted for an extended period following the removal of orthodontic appliances, extending more than five years post-surgery. Our findings suggest the following:

1. The mandibular position following two-jaw surgery was more stable than that following one-jaw surgery in both the transverse and anteroposterior dimensions.

2. In the one-jaw surgery group, the extent of anteroposterior relapse of the mandible prior to the removal of orthodontic appliances was predictive of the degree of subsequent relapse.

3. Transverse relapse of the mandible in the one-jaw surgery group was proportional to changes in the transverse inclination of the mandibular ramus.

4. Vertical relapse of the mandible was associated with pre- and post-operative changes in the buccolingual inclination of the lower first molar.

In this lecture, we will discuss key considerations for surgical orthodontic treatment in patients with asymmetric mandibular prognathism.

This study was conducted in accordance with the Declaration of Helsinki on medical protocol and ethics. It was approved by the Institutional Review Board of Tokyo Medical and Dental University (731 and D2014-011).

Dr. Sumit Yadav

Professor and Chair, Department of Growth and Development,
UNMC College of Dentistry, USA

Maxillary expansion with MARPE: Pros and Cons

Introduction: The talk will focus on the long-term effects of bone-anchored and tooth-anchored expansion appliances on alveolar bone and root resorption.

Methods: We evaluated 180 cone-beam computed tomography scans for 60 patients at 3-time points: T1 (pretreatment), T2 (postexpansion), and T3 (posttreatment), for 3 groups: bone-anchored expansion appliance (BA), tooth-anchored expansion appliance (TA), and controls (T1-T3: BA, 2 years 8 months; TA, 2 years 9 months; control: 2 years 7 months). The intermolar width, molar angulation, palatal width, vertical buccal bone height, buccal bone thickness at the alveolar crest, and root apex were measured in the 3 groups at different time points.

Results: In the short term, both BA and TA led to a statistically significant increase in the vertical buccal bone loss and root resorption after expansion compared with controls. Vertical buccal bone loss was significantly greater in tooth anchored and similarly root resorption was significantly more in tooth anchored in short-term. A substantial correlation was found between molar angulation and vertical buccal bone loss, and a negative correlation was found between intermolar width and buccal bone thickness.

Conclusions: There are pros and cons on using tooth anchored and bone anchored expansion appliances in short-term and long-term

Dr. Rachel Yang-Lim

Chairperson, Philippine Board of Orthodontics, Philippines

Tips and Tricks for a Successful Clear Aligner Treatment

The presentation will help answer the question "Why clear aligners?"

With the growing popularity especially with continuous new innovations and lowering costs of clear aligners in the market, many orthodontists have begun considering clear aligners as an alternative to traditional braces. However, many practitioners still question if clear aligners can do the job.

This presentation will showcase best practices proven to be effective over nearly a decade of using clear aligners as a preferred treatment. Implementing these tips will enhance the efficiency of treatment and provide optimal results that will help a practitioner to become a successful clear aligner provider.

Dr. N.R. Krishnaswamy

Vice Principal, Professor and Head, Department of Orthodontics,
Ragas Dental College and Hospitals, Chennai, India

Class III Corrections - Stirred a New with Evidence

Correction of class III skeletal malocclusion continues to be a challenge for the clinician.

The traditional approach has been to employ growth modification in the growing period, dento-alveolar camouflage in mild skeletal Class III in non growing patients and orthognathic surgery in severe skeletal class III patients. But, all the approaches have been shown to have limitations either in the outcome or in long term stability .With greater insight into the etiology, the advent of better diagnostic modality, improved methods of enhancing anchorage and more definitive surgical protocols there seems to be a better way to manage the skeletal class III malocclusion. This presentation will highlight the newer strategies with illustrative cases.

Dr. Valmy Pangrazio-Kulbersh
Department of Orthodontic, School of Dentistry,
University of Detroit Mercy, USA

Treatment of Facial Asymmetries from Early Childhood to Adulthood

Facial asymmetry is an individualized characteristic commonly observed sub clinically in the overall population. However, clinically significant facial asymmetry with associated morphologic, esthetic and stomatognathic problems warrant investigation of the underlying etiology and comprehensive clinical examination in conjunction with imaging studies for diagnosis, localization of asymmetry and treatment planning.

Facial asymmetry may be defined as differences in size and relationship of the two sides of the face and may or may not be related to individual or multiple malposed bones in the craniofacial complex. Facial asymmetry is, of all the non-syndromic facial abnormalities, the one that causes the most psychological distress to patients.

The prevalence of facial asymmetry according to Savert and Proffit is 34 % in their population studied. Studies have reported 6-12% prevalence of facial asymmetry in pediatric orthodontic patients, and in 35% of patients treated in dentofacial treatment centers. Higher prevalence of facial asymmetry has also been reported in Class III, Class I, and long face individuals. Chin deviation accounted for 75% of facial asymmetry and 85% show more deviation to the left side of the face.

The etiology of facial asymmetry is multifactorial, and a true asymmetry is largely related to disorders in the masticatory system. Contributing factors include temporo-mandibular joint (TMJ) dysfunction, plagiocephaly, condylar trauma, condylar hyperplasia, craniofacial microsomia, craniosynostosis, maxillary deformation, childhood radiotherapy, fibrous dysplasia, and idiopathic causes. Due to the diverse etiology of facial and mandibular asymmetry, patients exhibit a wide range of symptoms, from asymptomatic cases to severe disorders with significant impairment of chewing function. Moreover, any disorders of facial appearance may severely impact an individual's psycho-social function and mental health. The orthodontist role is to focus on symmetry of the facial complex defining what is normal vs. abnormal when evaluating the transverse dimension of the face.

Thorough clinical examination of the facial complex, both extra/intra-orally, precise radiographic interpretation, and model analysis are essential in diagnosing asymmetry. Accurate integration of CBCT and 3-D photorealistic surface imaging of the face facilitates rapid and precise creation of patient-specific 3-D computer models that can be used for diagnosis, treatment planning, treatment simulation and assessment. 3-D Stereolithographic (3-D-SLA) models – The use of 3-D-SLA models in maxillofacial surgery has significantly improved predictability of clinical outcomes when compared to similar treatments without its use.

Early identification of asymmetries will lead to greater success in treatment of the condition. Early treatment of dental and skeletal asymmetries in the mixed dentition, with growth modification utilizing functional jaw orthopedics, could prevent the development of further dental and/or skeletal asymmetry in the adult dentition and may lessen the extend of further surgical intervention. Severe skeletal discrepancies due to genetic abnormalities or significant trauma most likely will require surgical intervention.

The main goal of the orthodontic-orthognathic and adjunct specialties team should be the restoration of function, esthetics and stability, improving health, satisfaction and quality of life.

Dr. Simon J Littlewood

Consultant Orthodontist and Head, Orthodontic Department,
St Luke's Hospital, Little Horton Lane, Bradford, United Kingdom

Three Controversies in Orthodontic Retention: No Retainers, A Biological Approach to Reducing Relapse & Remote Monitoring

Orthodontic retention remains one of the biggest challenges in orthodontics. The traditional approach to reducing post-treatment changes is to mechanically hold the teeth in position using either fixed or removable retainers over the long-term. This approach brings problems with how to maintain, review and replace retainers, so alternative approaches have been considered.[1] In this presentation Dr Littlewood will discuss 3 controversial alternative approaches:

1. Treating patients without retainers
2. Increasing stability by altering the bone-biology around teeth
3. Monitoring patients with retainers using remote technology

Dr. Kenji Ojima

Adjunct Professor, Orthodontics Department, University of Torino, Italy

Possibility of Shape Memory Aligner -Next Generation Aligner Orthodontics

3D printed shape memory aligners are more versatile than conventional press type aligners. When heated, the material temporarily increases in malleability, allowing for aligner coverage to the undercut, which in turn increases aligner hold and leads to more effective control of tooth movement. This presentation will discuss how shape memory aligners are used clinically. It will also present common issues with conventional press aligners, and discuss solutions provided by shape memory aligners. In addition, the workflow of aligner creation using digital planning will also be introduced.

Attendees of this presentation will better understand improvements in shape aligner technology compared with conventional press aligners.

shape memory Aligners

Attendees of this presentation will understand how to reach better and more predictable treatment outcomes through use of shape memory aligners with strong fundamental consideration of aligner orthodontic biomechanics.

Attendees of this presentation will understand the role and procedure of digital planning for shape memory Aligners.

Dr. Jae Hyun Park

Professor and Chair, Postgraduate Orthodontic Program,
Arizona School of Dentistry & Oral Health, A.T. Still University, USA

Various Clinical Applications of TADs and Clear Aligners in Contemporary Orthodontics

Lecture description:
Temporary anchorage devices (TADs) offer a practical way to provide anchorage for various types of tooth movement. For instance, TADs and novel appliances are being used to treat challenging cases to control vertical, sagittal, and transverse dimensions. Treatment outcomes will be discussed using pre- and post-treatment records including cone-beam computed tomogramphy (CBCT). Nowadays, clear aligners (CAs) are very popular. This presentation will explore how TADs and CBCT can be used to facilitate orthodontic diagnosis and treatment planning, treatment simulation, and assessment of skeletal and dental changes along with CAs.

Three learning objectives:
Discuss clinical applications and biomechanical considerations of TADs and CAs;

Describe vertical, sagittal, and transverse correction with TAD and CAs;

Evaluate pre- and post-treatment superimposed CBCT images when TADs have been used

Dr. Nearchos C. Panayi

Assistant Professor, Orthodontic Department, School of Dentistry,
European University Cyprus, Cyprus

From thermoformed to Printed Aligners: Optimization of the Process

Thermoformed aligners were originally introduced over 50 years ago. However, Align revolutionized the industry by incorporating digital technology to introduce them as an alternative to fixed appliances near the end of the last century. Subsequently, other companies also began offering similar products in the orthodontic market. In the last five years, directly printed aligners have been introduced, which has changed the manufacturing process, shifting it towards more in-office aligner production.

Each phase in the evolution of aligners has involved different materials in the manufacturing process, each with distinct fundamental properties and different design tools. Scientific studies have played a crucial role in uncovering problems, aiding in the optimization of materials and processes. The aging and mechanical properties of the plastics in the oral cavity have been extensively studied, considering both human health consequences and aligner treatment efficiency. Additionally, researchers are currently investigating the issues of attachments and aligner compound release. Moreover, the significant problem of microplastic global release, which appears to be exacerbated in aligner treatment, requires comprehensive investigation."

Dr. Kee-Joon Lee

Professor, Department of Orthodontics, Yonsei University College of Dentistry, Seoul, Korea

Digital Workflow for Critical Decision Making

TBA

Dr. Norehan Binti Mokhtar

Associate Professor, Department of Dental Science, Advanced Medical and Dental Institute, Universiti Sains Malaysia, Malaysia

The Role of Artificial Intelligence in Orthodontics: Clinical Applications and Future Trends

Recent decades have witnessed enormous changes in dental profession and one of the most transformative technologies driving these changes is artificial intelligence. Artificial Intelligence (AI) is the emulation of human intelligence in machines that enable them to perform tasks that typically require human intelligence, such as problem-solving, learning, and decision-making. It's about machines not just following pre-programmed instructions but learning from data and experiences. As AI continues to evolve, its integration into orthodontics is redefining traditional practices and enhancing both diagnostic accuracy and treatment efficacy and also patient engagement.

AI in orthodontics automates cephalometric, facial, and dental analysis, improving the accuracy of skeletal and airway assessments for better diagnosis and treatment planning. It assists in decision-making for extractions and orthognathic surgery, which typically relies on human expertise. Image processing and analysis can be expedited by the incorporation of deep learning into software. Complex patterns in 2D and 3D images and text can be recognisied using deep learning algorithms. Autonomous detection of anatomical reference points on radiological images can be done with the integration of Convolution Neural Networks in the image analysis system. Artificial Neural Network model has been utilised to determine the cervical vertebral maturation stage in craniofacial growth and development research, producing results that are similar to conventional method .AI also enables orthodontists to remotely monitor patient progress through digital scans and enhances efficiency in image classification and clinical documentation. These advancements streamline orthodontic workflows and help in predicting treatment outcomes more precisely, especially for complex cases.

Despite its potential, a significant knowledge gap exists among clinicians due to limited educational resources, which impedes the effective application of AI in practice. Therefore, AI should be viewed as a supportive tool that complements, rather than replaces, human judgment, with successful integration relying on collaboration among clinicians, educators, researchers, and developers. Clinicians should embrace AI's potential as it develops while maintaining the greatest standards of patient care, security, and privacy. Recognising the challenges of integrating AI is essential and this will provide insights on how orthodontic professionals can embrace the future by staying ahead in this rapidly evolving field.

Dr. Wilson Lee

Honorary Clinical Assistant Professor, Orthodontics, Faculty of Dentistry, The University of Hong Kong, Honk Kong

From CAD/CAM Custom Made Lingual Appliances to Direct 3D Printed Aligner Seoulalign, Where Are We Now?

In the last 20 years, invisible orthodontic appliances have undergone a significant paradigm shift, revolutionising the way orthodontic treatment is delivered. Previously, metal braces were the traditional mode of treatment, which were visible and often uncomfortable. However, advancements in orthodontic technology have led to the development of invisible orthodontic appliances including lingual appliances and aligners, which are designed to be virtually invisible and more comfortable for patients. in 2024, the emergence of Direct 3D printed aligners has become a new hot topic. The biomechanics and indications are different in these appliances and we have to be aware of the limitations in each appliances.

Dr. Lee will discuss his vast experiences in lingual appliances, and the creation of a new Direct 3D printed aligner system Seoulalign, with illustration of clinical cases about the various options in treating our everyday orthodontic patients.

Dr. Simon Graf

Smile Inc, private orthodontic clinic

Transformation of Classic Orthodontics in the Digital Area, from 3D Metalprinting, Virtual Planing to Direct Printed Aligners

2014 Simon Graf introduced 3d metal printing in the orthodontic world. In his lecture, he will look back on almost 10 years of failures, errors and meander leading finally to useful virtually planned and direct metal printed appliances. He will wrap up today's standards and possibilities.

As direct printable aligner materials emerge on the market; he will go through some basic steps for the planning and production of direct printed aligners. Also, he will demonstrate some clinical cases with direct printed aligners, highlighting it's advantages and additional features.

Dr. Kelvin Wen-Chung Chang

Breeze Dental Center, Taiwan

Embrace 3C- A golden age of orthodontics!

The meeting theme of the 2024 TAO APOC is Embrace 3C: Connection, Communication & Creation. Connection is the commitment we make to perfection. Communication will demonstrate the beauty of teamwork. Creation is about digital orthodontics. I'll say we are now in a golden age of orthodontics! With continuous improvement and development of technology and materials, we can provide our patients with various treatment modalities and tools, like clear aligner treatment, TADs, maxillary skeletal expanders besides fixed appliances. Before starting the treatment, we can analyze our patients and use materials from soft to hard tissue or simulate them with AI-assisted software. Then we can confidently collaborate with our team members to solve complicated cases.

But are these up-to date and fancy tools a guarantee of an improved and better result? Sometimes does, and sometimes doesn't. TADs are helpful in anchorage enforcement or in those situations where we cannot find a proper anchorage. They can be designed to assist all types of tooth movements with high success rates. In solving the transverse discrepancy, miniscrew-assisted rapid palatal expander (MARPE) has been proven to achieve more skeletal effect compared with the traditional RPE (40-95% vs 20-50%). For the efficacy and predictability of clear aligner treatment, the study results vary from 30% to 90% accuracy, according to different types of tooth movement. Buccolingual tipping and upper molar distalization reveal the highest predictability. It is not effective in controlling rotation and extrusion. We should acknowledge that every tool or treatment modality has its pros and cons. It is crucial to get familiar with their indications and limitations before we use them. Through a hybrid treatment, we can find the appropriate treatment modality to achieve the best benefit for the patients.

Eventually, a comprehensive diagnosis and treatment planning is key to a successful orthodontic treatment. We shall not change the treatment goal or compromise the treatment result, no matter what tools we choose. This is the commitment to our orthodontic specialty. It is us, the orthodontist, to treat the patients, not the tools or the product companies. The golden rules from the textbooks never fail!

Dr. Koutaro Maki

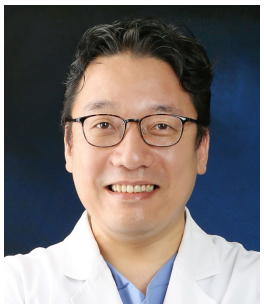
Director, Department of Orthodontics, Showa University Dental Hospital, Japan

Development of New Digital Simulation of Tooth Movement, and Intraoral Sensor System for Biological Information

Digital transformation is progressing rapidly in dentistry as well.

We have developed 1) 3D biomechanical simulation method for aligner orthodontics, and 2) various sensors in oral cavity for measurement of body temperature, jaw movement, SPO2 in mucosa, nasal respiratory, and PH of saliva in the oral cavity which can be attached to orthodontic appliances and dentures.

These developments have enabled more precise aligner orthodontics and gave the possibility to find systemic diseases such as cardiovascular disease and sleep disorders before they developed.



Dr. Seong-Hun Kim

Professor and Head, Department of Orthodontics School of Dentistry, Kyung Hee University, Korea

MARPE A to Z: The ATOZ

Various types of Miniscrew Assisted Rapid palatal expanders (MARPE) have been reported, with mixed results; the amount of skeletal expansion and the tipping effects are controversial between bone-borne and tooth-borne RPE. Even though Miniscrew Assisted Maxillary Skeletal Expander (MSE), known as a tooth bone borne type hybrid expander, has several advantages compared to tooth borne RPE, some controversial issues cannot empower targeted transverse correction in accordance with different type of maxillary deficiency. To overcome the limitation of hyrax-expansion screw assisted MARPE, The ATOZ orthodontic distractor (The ATOZ), bone borne only MARPE was developed as an orthodontic appliance that can induce Physiologic Sutural Distraction Osteogenesis (SDO) at the midpalatal suture (MPS) and grow the maxillary apical base without involving dental anchorage due to its orthopedic springback property. The ATOZ follows the Dr. Isaacson's suggestion of the RPE device condition for SDO in 1964 that a constant acting force with a low load deflection rate may be the most ideal procedure. The width, length, and depth of an ATOZ are 8.2 mm, 24.9 mm, and 9.3 mm, respectively and the width extends to 16.2 mm at its full activation. It is installed using three to four mini-screws on each side of MPS and its customized distraction protocol is to accommodate physiological phenomenon of a lag phase in bone remodeling to a different level of interdigitation of midpalatal suture and circummaxillary sutures. It leverages dynamic characteristics for storing and releasing orthopedic continuous force of 7kgf to 12kgf, offering a more

physiological approach to improving MTD. ATOZ can be utilized either as a pure bone-borne design or in a hybrid style with wire arms assembled on its base to expand the dentition simultaneously. Furthermore, it can function as a reliable bone anchored maxillary protraction device for anterior maxillary growth. This versatility from A to Z is why this device is named ATOZ. Through this presentation, the speaker wants to introduce this new type of MARPE, the ATOZ, and compare treatment effects and periodontal changes among conventional hyrax expander, MSE, and palatal side C-expander with scientific evidence and related clinical case reports.

Dr. Alessandro Mario Greco

Private Practice BeSure Orthodontics, Italy

Functional Aligner Treatment in Growing Patients

The evolution of Invisalign aligners based on research and the development of new features, new material, and new ClinCheck software, allowed to widen the use of the appliance in different kind of malocclusion at different age. In particular for kids and teenager the possibility to use aligners like a sort of functional appliance can really allow to avoid any other more invasive devices to reach a proper outcome. However the Evidence Based approach to Orthodontics is still the reference that we need to follow in order to provide patients our best therapeutic option and in order to be successful. For this reason the goal of this lecture will be based on how to combine proper literature review and clinical experience during functional Mandibular Advancement growth induced by aligners understanding some fundamental indicators to produce mandible forward position. Both approach will be defined from a clinical point of view and more interestingly going in deep in the digital planning in order to generate a reproducible ClinCheck.

Dr. Vas Srinivasan

Invisible Orthodontics-Private Practice, Australia

Why Spark? The Efficacy of Spark Clear Aligner on Extraction Cases Treatment

As an original founder doctor of spark aligners, I will be sharing with you the quick evolution of one of the most recognized aligner brands in the world. At the end of my presentation, you would be able to see how fast Spark has evolved, has been able to provide setups for all type of treatment mechanics. With an array of pre teen cases, teen cases, adult cases, that involve extraction, and surgical outcomes, spark can help all clinicians regardless of their experience with aligner systems that are currently available.

Dr. Heng-Ming Mark Chang

Director, Orthodontic Department,
Chang-Bing Show Chwan Memorial Hospital, Taiwan

Mandible Rotation? Think of Goal-orientated Aesthetic Treatment (GOAT) First!

To enhance chin projection, orthodontists often consider applying vertical control to allow for mandibular autorotation. However, does this approach truly result in better facial aesthetics for the patient? Orthodontic effects interact dynamically across all three dimensions, making a comprehensive examination and a dimensionally informed treatment plan essential.

After an extensive review of the literature, several key factors emerged as crucial and reproducible in achieving satisfactory aesthetic outcomes. These factors have been categorized into three dimensions and synthesized into a Goal-Oriented Aesthetic Treatment (GOAT) system, designed to evaluate cases prior to treatment.

In our orthodontic assessments, it is critical not to lose sight of the overall picture by focusing too narrowly on specific details. This presentation will introduce the GOAT system, detailing its components and demonstrating its practical application in everyday cases.

Dr. Yi-Jyun Chen

1. Artist Dental Clinic, Taiwan

2. Chung Shan Medical University, Taiwan

3C in Early Orthodontic Tx

Introduction: Early orthodontic treatment, often initiated during childhood or adolescence, has gained significant attention in recent years. This approach aims to address developing malocclusions and facial disharmonies at an earlier stage, potentially leading to improved outcomes and reduced treatment time. One effective strategy for early orthodontic treatment is the "3C" approach: Control, Correction, and Camouflage.

Control: The first "C" in the 3C approach emphasizes controlling the growth and development of the jaws. This involves using various orthodontic appliances, such as headgear, functional appliances, or palatal expanders, to guide the jaws into a more desirable position. By managing the growth of the jaws, we can prevent or minimize severe malocclusions and facial disharmonies that may require more extensive treatment later in life.

Correction: The second "C" focuses on correcting existing dental and skeletal irregularities. Orthodontic braces, in combination with other appliances, are used to align the teeth and address issues such as crowding, spacing, overbites, underbites, and crossbites. By correcting these problems at an early stage, we can improve the function and aesthetics of the teeth and jaws.

Camouflage: The third "C" involves camouflaging or disguising dental and skeletal imperfections. In some cases, it may not be possible to completely correct all the problems through growth control and correction. In these situations, camouflage techniques can be used to create a more harmonious appearance. This may involve using veneers, crowns, or other restorative treatments to enhance the smile and overall facial aesthetics.

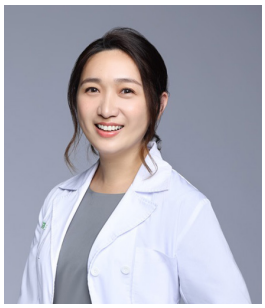
Conclusion: The 3C approach provides a comprehensive framework for early orthodontic treatment. By controlling the growth of the jaws, correcting existing irregularities, and camouflaging imperfections, we can achieve optimal results and improve the quality of life for patients. Early orthodontic treatment can lead to improved dental health, facial aesthetics, and overall well-being.

Dr. Cheng-Tsung Huang

Orthodontic department, Kingdom Dental Clinics, Taiwan

Innovative Approach of CAD/CAM Technology in Invisible Orthodontics

Invisible orthodontics is a trend in contemporary orthodontic technology, which can be divided into three types: aligner, lingual appliance, and myobrace. Thanks to digitalization and the introduction of CAD/CAM technology in the technician sector, traditional manual processes have been significantly upgraded, especially in the field of lingual orthodontics. Our team has developed the CDM lingual system, which has been extremely beneficial for my clinical treatments, particularly in the lab aspect. CDM stands for Combined Digital and Manual method, where the majority (about 80%) of the time-consuming lab work is completed using digital model setup and digital bracket positioning, while the remaining 20% of work with the transfer jig retains the advantages of manual production. Additionally, we have also incorporated CAD/CAM technology into the production of orthodontic teaching aids, showcasing the benefits of digital design. Lastly, I believe that direct print aligners and direct print myobraces will also be future trends.



Dr. Li-Fang Hsu

Attending Staff, National Taiwan University Hospital,
Hsin-Chu Branch, Taiwan

MARPE: Redefining Class III Non-surgical Treatment

The era of temporary anchorage devices (TADs) had fundamentally changed our orthodontic practice and the envelope of tooth movement. Among them, MARPE emerged as a game changer to correct transverse problems in adult patients with maxillary constriction. MSE, as one kind of the MARPE, served as a powerful solution to transverse problems. However, the benefit of MSE is not only seen in transverse direction. In this presentation, the following topics will be covered:

(1) The boundary of non-surgical Class III camouflage treatment

(2) Mini-orthognathic treatment: combining MSE with buccal shelf TADs

(3) Potential risks and case selection

Dr. Michael Yu-Jen Chang

Chair, Department of Dentistry,
Kaohsiung Chang Gung Memorial Hospital, Taiwan

Perspectives on Craniofacial Anomalies: Challenges and Solutions

Craniofacial anomalies encompass a wide range of congenital conditions affecting the development of the skull, face, and jaws. These anomalies often involve a combination of skeletal, soft tissue, and dental irregularities, presenting significant functional, aesthetic, and psychological challenges. This abstract provides an overview of the common types of craniofacial anomalies, the difficulties they pose for treatment, and contemporary solutions used to manage these conditions. Craniofacial anomalies are congenital deformities that affect the shape and structure of the head and face. Some of the most common disease include cleft lip and palate, craniosynostosis, hemifacial microsomia, and Treacher Collins syndrome. These conditions can vary in severity, affecting basic functions such as breathing, speaking, and eating, and can significantly impact an individual's quality of life. The treatment is often complex, requiring a multidisciplinary approach involving surgeons, orthodontists, speech therapists, and other medical professionals.

The management of craniofacial anomalies presents several challenges. First, the anatomical complexity of the face and skull makes surgical correction difficult. Each craniofacial anomaly may present a unique combination of skeletal and soft tissue defects, requiring highly individualized treatment plans. Additionally, many of these anomalies are present from birth, meaning that surgical interventions often must be timed according to the child's growth and development. This creates further complications in terms of planning and predicting outcomes. Another challenge lies in the psychological and social effects of craniofacial anomalies. Children with visible facial differences may experience bullying, social isolation, or low self-esteem, which can persist into adulthood. The psychological impact of these anomalies adds another layer of complexity to treatment, as comprehensive care must address both the physical and emotional aspects of the condition.

Despite the challenges, significant advances have been made in the treatment of craniofacial anomalies. One of the most important innovations in recent years is the use of three-dimensional (3D) imaging and printing technologies. 3D imaging allows for precise mapping of the craniofacial structure, enabling surgeons to plan complex procedures with greater accuracy. In some cases, 3D printing is used to create patient-specific models or surgical guides, enhancing surgical outcomes and reducing the risk of complications. Another solution is the integration of multidisciplinary care teams. Craniofacial anomalies require collaboration between various specialists, including plastic surgeons, oral and maxillofacial surgeons, orthodontists, speech pathologists, and psychologists. A coordinated approach ensures that all aspects of the anomaly, from functional to aesthetic to psychological, are addressed. Furthermore, early intervention, often starting in infancy, has been shown to improve long-term outcomes, particularly in conditions such as cleft lip and palate, where early surgeries can significantly improve speech and eating function. For more complex craniofacial anomalies, distraction osteogenesis has become a valuable tool. This technique involves the gradual lengthening of bones, which can be particularly

useful for correcting midface hypoplasia or mandibular deficiencies. This process encourages natural bone growth while reducing the need for extensive bone grafting.

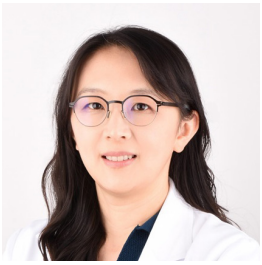
Craniofacial anomalies present a unique set of challenges, but advances in medical technology and a multidisciplinary approach have significantly improved the treatment and management of these conditions. The use of 3D imaging, early surgical intervention, and distraction osteogenesis has paved the way for more effective and individualized treatments, enhancing both functional and aesthetic outcomes. With continued research and innovation, further improvements in the quality of life for patients are expected, addressing not only physical deformities but also the emotional and psychological challenges that accompany these conditions.

Dr. Sabrina Chiung-Hua Huang

Big Apple Dental Clinic, Taiwan

Tough Case Made Easy

Treating borderline cases with skeletal discrepancies is always challenging to orthodontists. Whether to extract and how to design tooth movements to achieve final desired occlusion depends on meticulous treatment plan based on correct diagnosis. In this presentation, a novel approach of diagnostic system will be discussed.



Dr. Tzu-Ying Wu

1. Division of Orthodontics, Department of Stomatology, Taipei Veterans General Hospital ,Taiwan
2. School of Dentistry,National Yang Ming-Chiaotung University, Taiwan

Optimizing Strategies for Effective Problem Solving in Impacted Molar Uprighting

The prevalence of impacted molars has been increasing, necessitating a diverse range of treatment strategies based on several critical factors. Key considerations include the amount of available space, the initial vertical position and angulation of the impacted teeth, and the availability of anchorage sources. Prior to formulating a treatment plan, it is essential to evaluate these elements thoroughly.

During the execution phase, orthodontists often encounter challenges across transverse, vertical, and anteroposterior dimensions when uprighting impacted molars. This presentation will explore strategies for anticipating and addressing these issues effectively.

One promising approach is the use of miniscrew anchorage, which can offer significant benefits; however, ideal placement sites for these screws may not always be clinically accessible. The incorporation of multifunctional screw anchorage and advanced biomechanical designs can enhance treatment efficiency and outcomes. This discussion aims to provide insights into optimizing these techniques for improved results in molar uprighting procedures.

Dr. Sam Sheng-Pin Hsu

Assistant Professor, Department of Craniofacial Orthodontics, Chang Gung Memorial Hospital, Taiwan

Possibility of Shape Memory Aligner -Next Generation Aligner Orthodontics

When it comes to Surgical-orthodontic Treatment, collaboration in between different specialties is extremely critical. In addition, having consensus of the surgeon, the orthodontist, and even the patient with regard to the treatment goal and progress is the key to success. Therefore, a “visible” platform for treatment discussion is very helpful. In the talk, I am going to demonstrate the application of computer-aided surgical simulation (CASS) in the surgical orthodontic treatment, which makes an effective communication in between doctors and patients. Accordingly, surgeons and orthodontists can discuss the treatment possibility thoroughly and come up with innovative ideas about treatment plans, options, and even surgical techniques. This comprehensive creation sometimes benefits our patients very much. Once the surgical simulation completed, we need to transfer the plan into real world accurately. The 3D CAD-CAM surgical stents facilitates a seamless connection in between the 3D simulation and actual operation. Furthermore, the combination of surgical simulation and tooth movement simulation is also exciting. A couple cases will be shown to explain.

Dr. Richard Chen-Feng Cheng

Part-time instructor, Orthodontic Department in Dentistry, Chang-Gung Memorial Hospital in Kaohsiung, Taiwan

Mindset of Anterior Teeth Movements for Esthetic Planning in Hyperdivergent Face

For patients with hyperdivergent facial pattern, they commonly present esthetic problems such as excessive gingival display in smiling, lip prominence or incompetence, and anterior teeth protrusion. To solve these problems during orthodontic treatment, three-dimensional tooth movement must be considered and carefully designed related to biomechanics in order to accomplish a good treatment results. So the application of TSADs combined with various orthodontic appliances become the most reliable modalities having adopted that can provide a more efficient and predictable means of moving teeth.TSADs not just anchor teeth to correct sagittal discrepancy conventionally, they also can implement active vertical control to enhance the esthetic needs. This presentation will not only discuss basic anatomic imitation and challenges for hyperdivergient facial pattern confronted while retract anterior teeth with orthodontic force assisted from TADS. It will also examines various force system designed in different situations in order to achieve the optimal esthetic and functional outcomes.

Dr. Khaled Samir AboulAzm

Orthodontist, Professor and Founder,
Pharos University, Alexandria, Egypt

Challenging Different Types of Teeth Transposition with Simplified Mechanics

Managing transposition cases has always been a significant challenge in clinical practice due to the unpredictability and complexity involved. However, despite the challenges, correcting transposed teeth can yield great rewards for both patients and orthodontic professionals.This lecture aims to provide a brief overview of the existing literature on transposition management and present clinical cases that highlight the difficulties and excitement encountered during treatment. The supporting biomechanical principles will also be illustrated.By the end of this lecture, attendees will have gained knowledge and skills necessary to effectively manage transposition cases using efficient and simplified techniques. Transposing teeth can yield great rewards for both patients and orthodontic professionals when approached with careful planning.

Dr. Oyku Dalci

1. Senior Lecturer, Department of Orthodontics and Paediatric Dentistry, Sydney Dental School, The University of Sydney, Australia
2. Orthodontic Course Coordinator for DClinDent in Orthodontics, Specialist Orthodontist, Sydney Dental Hospital

The Use of Artificial Intelligence Supported Remote Monitoring in Different Orthodontic Applications, from Interception to Retention

Artificial intelligence (AI) supported technologies are being utilized in all fields of dentistry to revolutionize diagnostics and enhance treatment efficiency, convenience, and predictability. One of these technologies is an AI-supported remote monitoring system named Dental Monitoring (DM). DM uses an AI-supported photo tracking algorithm to detect tooth movement and may be a useful tool for patient communication and engagement. Up until recently, most of the published research into remote orthodontic monitoring is focused on clear aligners.

Several new research studies undertaken at the University of Sydney explored the use of DM for interceptive treatment applications, fixed appliance monitoring, and orthodontic retention with the aims to investigate:

- Whether interceptive treatment could be provided with remote monitoring and aligners,

- Would using DM to change wires as they become passive shortens treatment time during leveling and alignment,

- If using DM helps improve the stability of treatment outcomes following fixed appliance treatment,

- Patient and clinician experience using remote monitoring.

This talk will summarize the findings from these several clinical trials.

Dr. Shinhuei Wang

1. Member, Academic Committee, Taiwan Association of Orthodontists
2. Member, International Affairs Committee, Taiwan Association of orthodontists

Striving for Balance Between Sagittal and Vertical Dimensions In Orthodontics- The "Perfect Pitch" for Profile, Smile and Airway

With the advances of temporary skeletal anchorage devices, the scope of non-surgical orthodontics is broadened. Importantly, the application of force can diverge from conventional orthodontic mechanics, allowing force to be exerted above the dentition, consequently inducing occlusal plane rotation.

The strategic placement of high-positioned miniscrews has the potential to intrude the anterior teeth and, in some instances, the entire maxillary dentition. This whole arch intrusion with counterclockwise rotation opens avenues for correcting gummy smiles and alleviating mentalis strain, especially beneficial for patients exhibiting a Class II high angle protrusive facial pattern.

Nevertheless, the counterclockwise rotation of the occlusal and mandibular plane is not always advantageous. It has the potential to flatten the smile arc, accentuate the prominence of genial angle, and compromise the esthetics of brachycephalic patients with insufficient incisor show.

Moreover, although the 2019 AAO white paper represented a significant milestone in exonerating orthodontists from the allegations of inducing sleep apnea, yet the controversy regarding the impact of anterior retraction on airway volume still persists.

This presentation aims to discuss the tangling interrelationship between the sagittal and vertical dimension in orthodontic treatment and try to achieve the best balance between facial profile, smile arc and airway with controlling the pitch rotation of the occlusal plane.

Dr. Zolzaya Bodikhuu

Orthodontist, Department of Orthodontic, School of Dentistry,
Mongolian National University of Medical Sciences, Mongolia

Influence of Malocclusion Types on the Quality of Life, Anxiety, and Depression of the Mongolian Population

The purpose of our population-based cross-sectional study was to assess the association between malocclusion and the quality of life (QoL), anxiety and depression.

Methods: The study was conducted between July and October 2022 in Mongolia. Clinical examinations were carried out by orthodontists. Using a millimeter ruler, excessive and reverse overjet were recorded abnormal. Crowding was recorded for the incisor and posterior segments of each jaw. Anterior diastema was diagnosed when there was a space of at least 1 mm between incisors in either arch. Facial profile (straight, convex, and concave) was determined by vision using soft tissue reference points. Each participant completed the World Health Organization Quality of Life (WHO-QoL-BREF) and the Hospital Anxiety and Depression Scale (HADS) and an orthodontic questionnaire.

Results: The study consists of 436 participants aged between 13 and 65 years (mean age=39.6±14.8), the majority were females 297 (68.1%). The prevalence of malocclusion, in general, was 371 (85.1%). In terms of the prevalence of the malocclusion traits: abnormal overjet was 245(56.2%), crowded dentition was 118 (27.1%), and diastema was 75 (17.2%). Participants with malocclusions had increased depression score (p=0.008). Participants with diastema had decreased QoL in physical and social domains (p=0.022, p=0.020). Moreover, reverse correlations were found between depression scores and QoL in psychological, social, and environmental domains in the population with malocclusion traits (p=0.035, p=0.0039, p=0.002).

Conclusion: We found that the prevalence of malocclusion was 85.1% in the general population. Participants with malocclusion have decreased QoL which is associated with increased depression scores.

Dr. Pushkar Manandhar

Associate Professor, Peoples' Dental College and Hospital, Nepal

In Search of Divine Face

This presentation intends to include the truth of one of nature's most fascinating numbers, Divine proportion, into dentistry including Orthodontics to come out with beautiful result, a Divine face.

The Divine Proportion is a little-known phenomenon that suggests that there's a mathematical equation that is consistent with the aesthetics of good composition. Throughout history it has been speculated that the golden ratio is prevalent in every aspect of our universe—from the natural growth pattern of the nautilus seashell to the pyramids of Egypt to the musical compositions of Mozart and Beethoven. The examples around us illustrate how divine proportion appears in nature and human design through historic art and architecture and in contemporary design and brandings.

It is believed that inclusion of divine proportion makes anything anyone more pleasing to the eyes. Thus, the Divine proportion in the different fields of dentistry including, orthodontics could make a difference in the aesthetic outcome of a face as a whole

Dr. Viet Hoang

Lecturer, Department of orthodontics and Pedodontics,
Faculty of dentistry, Van Lang University, Vietnam

Applications of 3D Printing Technology in In-house Clear Aligner Fabrication

The utilization of three-dimensional (3D) technologies has become pervasive across various domains of dentistry, particularly in orthodontics. This implementation has progressively revolutionized clinical practices, encompassing diagnosis, treatment planning, monitoring, and outcome evaluation. Clear aligner therapy, a burgeoning realm heavily reliant on 3D advancements, has witnessed exponential growth. Aligner companies vigorously market these solutions to patients, while recent significant reductions in equipment costs have incentivized orthodontists to consider in-house fabrication of aligners and 3D printing orthodontic appliances. This approach holds promise in optimizing overhead expenses, enhancing flexibility, streamlining delivery, and optimizing clinicians' time, particularly through techniques like Fused Deposition Modeling (FDM) printing. Moreover, emerging technologies facilitate direct printing with novel workflows, promising environmental benefits albeit at potentially higher costs. The advent of in-house aligner fabrication is poised to reshape the economics of Clear Aligner Therapy (CAT) for numerous practices, ushering in a new era of orthodontic treatment paradigms.

Dr. Chidsanu Changsiripun

Associate Professor, Department of Orthodontics, Faculty of Dentistry, Chulalongkorn University, Thailand

A 'Jack-of-all-Trades' Orthodontist: Keener to Master Case Reports, Systematic Reviews, and Everything In Between

Is being a Jack of all trades considered bad in contemporary orthodontics? As I have grown as a clinician with a researcher mindset, I do believe that orthodontists are fortunate to have a wide range of practice environments available to pursue our interests and master many professional skills. In the era marked by the availability of diverse modalities for any orthodontic treatments, we are presented with the challenge of opting for the best-suited approach weighing the advantages and drawbacks tailored to each individual. The presentation will highlight both clinical tips and research findings derived from investigations conducted by our team in Thailand. This aims to synthesise publications from various levels and to help contextualise how we can apply existing evidence to our practices in terms of formulating clinical recommendations and determining future research priorities.

Dr. Yi Lin Song

Consultant, National Dental Centre Singapore, Singapore

SMILE (Specialized Mixed-reality Innovative Learning Experience) for Miniscrew Implant Insertion in Orthodontics

Miniscrew implant insertion training conventionally involves hands-on practice using typodont models with relevant surgical armamentarium. Without access to sophisticated 'see-through' dental models for teaching, visualization of surrounding anatomy is often challenging. This presentation will showcase the humble development process of a mixed-reality (MR) application, named S.M.I.L.E (Specialized Mixed-reality Innovative Learning Experience), and how we have testbed its use in a group of dental residents as a novel approach for teaching the miniscrew implant insertion procedure.

Dr. Maria Lourdes Torres-Garcia

Affiliate Member, Association of Philippine Orthodontists, Philippines

Embracing the 4th C: Caring to be a Comprehensive Orthodontist - Revelations Beyond My Research on Benzalkonium Chloride

One of the challenges that orthodontists face in their practice is the occurrence of enamel demineralization around fixed appliances. The prevalence of white spot lesions in orthodontic patients has been reported to be as high as 79.3% (Sharab, AJO-DO, 2023).

This presentation aims to share with the audience the speaker's research on the effect of an orthodontic adhesive containing benzalkonium chloride (BAC) on the reduction of enamel demineralization

(Torres-Garcia, AJO-DO, 2019). An in vivo animal study on Sprague-Dawley rats, inoculated with Streptococcus sobrinus, was performed and revealed that the addition of BAC has the potential to reduce the amount and percentage of enamel demineralization around orthodontic brackets, and that BAC may also have an anti-cariogenic effect.

More importantly, the speaker aims to impart the significance of caring to do research and furthering other facets of being a comprehensive orthodontist, such as the improvement of one's clinical skills, being an active member of an organization, and sharing one's knowledge as a mentor, in the over-all advancement of the profession of orthodontics.

Dr. Kieran Daniel Tsang

Lecturer, Department of orthodontics and Pedodontics,
Faculty of dentistry, Van Lang University, Vietnam

Orthodontic Management of Impacted Teeth

Impacted teeth is a common condition encountered by orthodontics students and orthodontics, including impacted incisors, canine, premolar and molar. There are different modality and methods treating impacted teeth or even teeth transposition. Critical diagnosis and customized treatment planning are crucial in the success of treating impacted teeth. Two common approaches in managing impacted teeth include orthodontic traction and surgical extractions. In this presentation, different methods to manage impacted teeth will be discussed and there will be cases showing different mechanics to align impacted teeth into the arch.

Dr. Kyung-A Kim

Associate Professor, Department of Orthodontics, School of Dentistry, Kyung Hee University, Seoul, Korea

Innovative True 3D Digital Setup for Camouflage Treatment of Class II Malocclusion: Emphasizing Mandibular Position

The advancements in dental technology have significantly transformed modern orthodontic practices, introducing digital innovations in diagnostic records, appliance design, and fabrication. Typically, digital setup programs utilizing oral scan files involve tooth segmentation and axis setting for each tooth, followed by teeth arrangement based on the desired occlusal plane and arch form. However, these programs encounter limitations, such as the inability to accurately replicate the mandibular movements in occlusal plane setup and the challenges in ensuring tooth movement stays within anatomical boundaries, even with CBCT-based tooth axis setting.

The latest 3D digital simulation technology integrates intraoral scanners, CBCT, and facial scanners, providing a comprehensive digital diagnostic setup. This integration allows for precise control of three-dimensional tooth movement and reliable orthodontic analyses, accurately predicting treatment outcomes. By aligning CBCT and oral scan files down to the root level, orthodontists can determine the exact position of roots within the alveolar bone. Additionally, replicating the anteroposterior, lateral, and vertical movements of the condyle, this capability facilitates the establishment of detailed three-dimensional treatment plans that consider vertical, anteroposterior, and transverse changes in response to alterations in vertical dimension.

In this presentation, I will share cases of Class II patients where treatment plans involving mandibular position changes were executed using 3D digital simulation. Utilizing top-notch approach that considers the final position of the mandible in camouflage treatment offers significant advantages in managing Class II malocclusions. This approach not only enhances treatment decision-making for orthodontists but also improves patient satisfaction by allowing for detailed visualization and planning.

Dr. Wan Nurazreena Wan Hassan

Associate Professor, Faculty of Dentistry, Universiti Malaya, Malaysia

Gaze Behaviour Towards Dental Aesthetics and Psychosocial Well-Being: Evidence to the Use of a Sociodental Approach in the Assessment of Orthodontic Treatment Need

Malocclusion is a global issue that negatively affects the quality of life, predominantly in the dimensions of emotional and social well-being. It impacts between 92.6% to 96% of Malaysian youth.

This presentation will provide valuable insights into the intricate relationship between dental aesthetics and viewer engagement, emphasizing the importance of considering the aesthetic and psychosocial dimensions of malocclusion in prioritization of orthodontic treatment. Through eye-tracking study, the severity of malocclusion has shown to significantly shift the visual attention towards the oral region, particularly in those who are highly impacted by their dental aestheics.

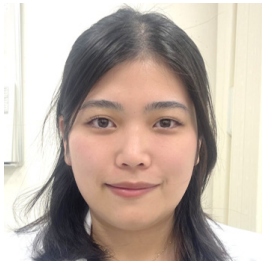
Ultimately, there is a need for a more targeted approach for prioritising treatment to those who have the greatest need and would benefit most from treatment. The sociodental approach in needs assessment that incorporates the psychosocial impact of dental aesthetics questionnaire (PIDAQ) with the Index of Orthodontic Treatment Need (IOTN) would provide a more thorough assessment of treatment need. This presentation will discuss its approach in needs assessment using the simplified PIDAQ for a busy clinical setting. Finally, an understanding of the comprehensive needs of young individuals seeking orthodontic care would thus contribute to the improvement in psychosocial outcomes and patient satisfaction.

Dr. MSK Adiwirya

Full Time Lecturer, Department of Orthodontics, Faculty of Dentistry, Universitas Indonesia, Indonesia

Extraction Pattern in Orthodontics: The Unusual Strategy

The need for tooth extraction in orthodontic treatment has been discussed since early days and its decision involved more than just the need to obtain space in the arches. The frequent four first premolar extractions protocol would be beneficial in some particular types of cases, but then again one certain protocol does not fit all. The orthodontists often encountered challenging situation that required thorough assessment of all aspect from the patient's malocclusion to acquire appropriate extraction strategy. The definite extraction decision should always consider the adequate functional occlusion and smile aesthetics as ultimate outcomes, not to mention the prospects for long-term stability.



Dr. Ria Kinjo

Mechanism, Accelerated Tooth Movement by Micro-osteoperforations, Japan

Accelerate Orthodontic Tooth Movement

Micro-osteoperforations (MOPs) have been reported to accelerate orthodontic tooth movement (OTM), and tumor necrosis factor (TNF)-α has been reported to play a crucial role in OTM. In this report, the influence of MOPs during OTM was analyzed. We evaluated the expression of TNF-α with and without MOPs by RT-PCR analysis. A Ni-Ti closed coil spring was fixed between the maxillary left first molar and the incisors as an OTM mouse model to move the first molar in the mesial direction. MOPs were prepared on the lingual side and mesial side of the upper first molars. Furthermore, to investigate the target cell of TNF-α for osteoclast formation during OTM with MOPs in vivo, we created four types of chimeric mice in which bone marrow of wild-type (WT) or TNF receptor 1- and 2-deficient mice (KO) was transplanted into lethally irradiated WT or KO mice. The results showed that MOPs significantly increased TNF-α expression, the distance of tooth movement and osteoclast formation. Furthermore, mice with TNF-α-responsive stromal cells showed a significant increase in tooth movement and number of osteoclasts by MOPs. We conclude that MOPs increase TNF-α expression, and tooth movement is dependent on TNF-α-responsive stromal cells.

Dr. Hrushikesh Aphale

Professor, Diplomate of the Indian Board of Orthodontics, India

Resolving the Conundrum of Maxillary Anterior Temporary Skeletal Anchorage: Understanding the Biomechanics and Force Vectors for Maxillary Incisor Intrusion

Temporary skeletal anchorage device (TAD) assisted intrusion is commonly used method for maxillary anterior intrusion. One of the factors determining the position of the TAD would be the inter radicular space available. The change in the position of the TAD would change the direction of force, the force vector and hence the effective tooth movement. It is important to understand the difference in the tooth movements that would occur with changes in the force vectors, for effective upper anterior intrusion. This paper aims to throw light on the different clinical situations that can arise during the use of TAD's for upper incisor intrusion. The paper enlists different positions of TAD's that can be used, and highlights the changes in effective tooth movements that would occur with changes in the points of force application on the archwire. It also showcases how, in clinical situations, force vectors can be changed by changing the position of TAD's and its the points of force application. This

is supplemented with research findings obtained using different 3D finite element analysis. The position of TAD, the point of force application, and the effect it has on intrusion and proclination of the maxillary anterior teeth is showcased using different 3D finite element models. The force distribution on the PDL, on the alveolar bone and root surface of the maxillary anteriors is also analysed. Different case scenarios are presented where different positions of TAD's have been used, based on this knowledge, for effective maxillary incisor intrusion.

Dr. Mei H'uah Chin

Dr. Ministry of Health, Malaysia

Mandibular Advancement Appliance—Therapeutic Position and Titration

The Mandibular Advancement Appliance (MAA) offers a promising alternative to Continuous Positive Airway Pressure (CPAP) for treating obstructive sleep apnoea (OSA). Beyond the basic goal of symptom relief, MAA leverages mandibular advancement to increase upper airway space, easing symptoms like snoring and excessive daytime sleepiness. Achieving the optimal therapeutic position is crucial, yet titration can further enhance patient comfort and adherence. While CPAP remains the benchmark, MAA's benefits, from portability to reduced invasiveness, broaden the possibilities for effective OSA treatment. As compliance and side-effect management become central to MAA's clinical success, could this approach surpass expectations for non-invasive OSA treatment?

Dr. Dashrath Kafle

Clinical Coordinator, Dental program, Dhulikhel Hospital, Kathmandu University Teaching Hospital, Nepal

Tough Talk: Exploring The Benefits of Clear Aligner Therapy Over Conventional Orthodontic Appliances

Clear aligner therapy has emerged as an invisible solution in orthodontic care, offering numerous benefits over traditional orthodontic therapy. With the advent of design softwares, easy 3D printing solution and better thermoforming materials, clear aligner therapy has stepped into mainstream orthodontic practice. One of the primary advantages of clear aligners is their appearance, allowing individuals to undergo orthodontic treatment without compromising the aesthetics. More and more adult patients are now opting orthodontic therapy because of clear aligners. Additionally, clear aligners are removable, enabling patients to eat, drink, brush, and floss with ease, leading to improved oral hygiene throughout treatment. Moreover, clear aligners typically result in fewer visits which might be the topic of controversy. Furthermore, the absence of metal wires and brackets minimizes the risk of oral injuries and discomfort commonly associated with traditional braces.

In this presentation, the author will try to precisely incorporate Aligner Philosophy, Designs, Biomechanics and application and delve into the clear benefits of Aligner over conventional Orthodontic Therapy.

Dr. Sheng-Chin Lin

Private Practice, Taiwan

“HPPG” Technique: Easy and Efficient Mechanics for Treating Gummy Smile and Hyperdivergent Faces

Class II hyperdivergent cases are very common in daily orthodontic practice, especially in Asian population. Active vertical control with the use of mini-screw is often needed to solve the patients’ chief complaint, including gummy smile, lip incompetency, mentalis strain. By reducing the vertical dimension of dental height, the mandible will counterclockwise rotate. And by changing the chin position, we might have the chance to get more dramatical change of the patient’s lateral profile. There are various mechanical design proposed to intrude the total maxillary and mandibular dentition. This lecture aims to discuss how to design the optimal force vector due to center of resistance of dentition. Key points and common mistakes in active vertical control will be summarized. Also, the “HPPG technique”: using one mid-palatal screw to create the equivalent force vector for maxillary total intrusion, will be introduced.

Dr. De-Shing Chen

1. Attending doctor, Taipei Medical University Hospital, Taiwan
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Using New Tools, But Keep the Old. One is Silver; the Other is Gold

The contemporary orthodontic concept has been developed over a century. There were some breakthroughs. One is improvement of bonding technique. Orthodontists started to use bonding instead of banding. Afterwards, the concepts of straight-wire technique and self-ligating brackets came to the field of orthodontics. Clinician could spent less time bending wire and doing ligation to make treatment more efficient. However, some still thought the traditional method had better control of teeth movement. In the past two decades, the trend of aligner treatment spread around the world, offering patients a more comfortable option. The disadvantages of aligner treatment were also reported, including posterior open bite and poor torque control. In my training background, I have used traditional brackets without prescription and self-ligating bracket system with prescription. I also started to treat patient with clear aligners after my training in hospital. Every tool has its own limitations. In this speech, I would focus on the advantages and disadvantages of the systems mentioned above and how I merge them together in my clinical treatment.

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To Preserve or Not? Orthodontic Treatment to Impacted Teeth

Impacted teeth are a common clinical complaint and a challenging area that often requires extra attention from orthodontists. When encountering such cases, the first question that typically comes to mind is whether the impacted tooth should be brought into alignment and retained, or extracted and managed di□erently. Additionally, as practitioners, we must carefully consider the patient's complaint and needs, as well as dedicate e□ort to accurate diagnosis and meticulous treatment planning. This ensures a smoother treatment process and minimizes the risk of confusion that could affect both the course and outcome of therapy. In this lecture, I will share insights on the management of impacted teeth, along with practical clinical cases. I look forward to receiving feedback from esteemed clinicians.

2024

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