

# 第十五屆第一次會員大會暨學術演講 The 29<sup>th</sup> TAO Annual Meeting

論文集 Abstract Book



2016 / **12** / **2 • - 4 • December 2-4, 2016** AM9:00~PM5:00



台北萬豪酒店(台北市中山區樂群二路199號) Taipei Marriott Hotel

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主辦單位:中華民國齒顎矯正學會 活動網址:http://taoannualmeeting.com/

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# 理事長的話

2016年中華民國齒顎矯正學會年會暨學術演講及APOS (Asian Pacific Orthodontic Society) Resident Forum,由台北籌備團隊精心規劃三天的活動,將於12月2日(五)~4日(日)首次在台北萬豪酒店舉行,希望讓各位貴賓有一新耳目的感覺,此次年會有以下特色:

特色一:為年輕醫師所規劃的受訓醫師(研究生)大會口頭報告競賽。將於12月2日率先登場,藉由這 次機會,大家可以不用出國就可觀摩各國年輕的菁英矯正研究的特色,他山之石,可以攻錯,提升彼此矯正 教育的水準。

特色二:12月3日將邀請四位國際知名的講師針對此次主題『失敗啟示錄』(Learning from Failure), 全程英文演講作深入的探討與發揮,保證讓各位會員收穫滿滿,不容錯過。

特色三:12月4日則邀請國內外教學醫院教授級講師及矯正界知名重量級講師,根據幾個創新的主題發 表精彩的演講。例如:Biomechanics, Retreatment, Communication, Failure cases等等。藉由這些領域箇中 翹楚的經驗分享,讓各位會員醫師有吸收到更新先進知識的機會。期望讓所有與會的醫師有滿滿的收穫,留 下美好的回憶。

在此誠摯邀請各位貴賓蒞臨台北年會。

中華民國齒顎矯正學會理事長 劉人文 聯合敬邀 第十五屆第一次會員大會 會 長 鄭信忠

Carefully planned by the organizing team based in Taipei, the 2016 TAO Annual Meeting & Resident Forum would be held during Dec. 2 - Dec. 4, 2016 at Marriott, Taipei. Participants will hopefully be refreshed. The event has the following features:

Feature 1:

Designed for young dental professionals, the oral presentation contest will make its debut on Dec. 2. With this venue, we can observe research characteristics of elite orthodontists from other countries. As an old saying goes, enlightenment from other people may help to overcome one's shortcomings. Educational standards will be raised mutually.

Feature 2:

Four world-renowned speakers will give English lectures on the theme - Learning from failure. An opportunity for in-depth discussion will be provided. You can't miss it since a professionally rewarding experience is guaranteed.

#### Feature 3:

Aside from well-known lecturers in the orthodontic field, professors from domestic and foreign teaching hospitals will give lectures. Through sharing experiences with experts in the orthodontic field, TAO members will absorb the latest and advanced knowledge. All attendees will hopefully feel professionally fulfilled and have wonderful memories.

We hereby cordially invite you to participate in the 2016 TAO Annual Meeting.

## Eric JW Liou, DDS, MS

## Hsin-Chung Cheng, DDS

President Taiwan Association of Orthodontists

Chairman Organizing Committee, 29th TAO Annual Meeting

# 大會會長的話 Welcome remarks

親愛的齒顎矯正醫師同仁,平安!

首先謹代表2016年中華民國齒顎矯正學會年會籌備大會,誠摯邀請閣下參加今年度的盛會!

今年的大會有幾點跟過去不同,首先,開會地點在目前全台灣最新且最豪華舒適的萬豪酒店舉行,享 受高品質的學習環境及設施;第二,大會主題為「Learning from Failure」,打破過去演講都在報導成功病 例的學習,而您可看盡所有失敗病例及學習如何轉為成功之過程。第三、邀請國際大師Ravindra Nanda、 WFO理事長、APOS理事長等專家演講,讓您不必出國就可學習最進步的矯正新知。

最後,再次誠摯邀請您的參加,祝您學習滿滿,平安順利!

中華民國齒顎矯正學會2016年會籌備大會會長鄭信忠 敬邀

Dear Colleagues and Friends,

On behalf of the Taiwan Association of Orthodontists (TAO), I would like to invite all of you to attend the Annual Meeting 2016 of TAO. The theme of this meeting is "Learning from Failure" that will change your learning experience from successful cases lectures and get the successful tips from the failure cases presentation in this meeting. The meeting will be held in the newest, luxurious and well facilitated Marriott Hotel where will let you enjoy the high quality lectures. By the way, we also invite the prof. Ravindra Nanda, the Head of Craniofacial Department and Chair of the Division of Orthodontics at the School of Dental Medicine, University of Connecticut, Prof. Allan Thom, the president of WFO, and prof. Nikhilesh Vaid, the president of APOS ..., etc. It is hoped that the meeting will set forth the new thinking and consideration for all orthodontic treatment and strategies that will enrich our knowledge as well as providing the latest evidence-based orthodontics.

Henceforth, I am sure that your participation in this meeting will be significant to the advancement of your orthodontic knowledge and yet a memorable getaway holiday in Taipei, Taiwan.

Warm regards.

## Hsin-Chung Cheng, DDS, MS, PhD

Chairperson of Organizing Committee on Annual Meeting 2016 of TAO





# 第十五屆第一次會員大會暨學術演講會 籌備會組織表

# The 29<sup>th</sup> Annual Conference of Taiwan Association of Orthodontist Organizing Committee

理事長 President: 劉人文 Eric JW Liou 大會會長 Chairman: 鄭信忠 Hsin-Chung Cheng 大會副會長 Vice-Chairman: 呂世平 Shih-Ping Lu 大會總幹事 Secretary General: 賴向華 Eddie Hsiang-Hua Lai 大會副總幹事 Deputy Secretary General: 黃昱霖 Yu-Ling Huang 學術(演講組) Scientific Committee: 許勝評 Sam Sheng-Pin Hsu 宣傳(資訊組) I.T. Committee: 盧泰良 Tai-Liang Lu、陳建鋒 Chien-Feng Chen、陳俊伊 Chun-I Chen 國際(含接待、公關)Int'l Affairs Committee: 呂世平 Shih-Ping Lu、蔡嘉倫 William Ka-Lun Choi、陳信光 Hsin-Kuang Chen、劉必慧 Pi-Huei Liu 王欣惠 Shin-Huei Wang、吳秋柔 Chiu-Jou Wu、劉志彬 Chee-Ping Liew、廖珮雯 Pei-Wen Liao 財務 Treasurer: 黃昱霖 Yu-Ling Huang 受訓醫師大會 Resident Meeting Committee: 陳易駿 Kevin YJ Chen、柯雯青 Wen-Ching Ko 場地 Facility: 劉育佳 Yu-Jia Liou、楊雅慧 Ya-Hui Yang 文宣 Propaganda Committee: 况守信 Shou-Hsin Kuang 晚宴組 Banquet Organizing Committee: 王欣惠 Shin-Huei Wang、劉必慧 Pi-Huei Liu 選務 Electoral Committee: 賴向華 Eddie Hsiang-Hua Lai、賴泰廷 Tai-Ting Lai

總務 General Administration: 張文忠 Wen-Chung Chang



# 會場平面圖 Location Map & Floor Plan



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# 演講時刻表 Program at a Glance

## 2016年12月3日(六) DEC. 3, 2016 (SAT.)

08:00~09:00	報到 Registration (5F)	
演講地點 Venue	5F萬豪廳 Grand Ballroom 5F	
09:00~09:45	Allan R. Thom Risk, Responsibility and Resolution	<b>Chairperson</b> Bryce Lee 黃炯興
09:45~10:00	開幕式 Opening Ceremony	
10:00~10:45	Abbas Zaher Management of difficult canine impactions	<b>Chairperson</b> Bryce Lee 黃炯興
10:45~11:15	休息時間 Coffee Break (5F)	
11:15~12:00	<b>Chai Kiat Chng</b> The Unhappy Patient and the Medical-legal issues in orthodontics: Prevention, sufferance, resolution	<b>Chairperson</b> Geraldine Lee 高嘉澤
12:00~13:00	午餐 Lunch (5F)	
演講地點 Venue	5F萬豪廳 Grand Ballroom 5F	
13:00~14:30	Ravindra Nanda Contemporary Management of Openbite Patients	<b>Chairperson</b> Kazuo Tanne 蔡爾輝
14:30~15:00	休息時間 Coffee Break (5F)	
15:00~16:30	<b>Ravindra Nanda</b> Acceleration of Orthodontic Tooth Movement: Possibilities and Limitations	Chairperson 費筱宗



## 2016年12月4日(日) DEC. 4, 2016 (SUN.)

07:30~08:30	報到 Registration (5F)			
演講地點 Venue	5F 萬豪廳 I Grand Ballroom I 5F		5F 萬豪廳 II Grand Ballroom II 5F	
主題 Topic	Retreatment		Invisalign	
08:30~09:15	<b>陸開盛 Hoi-Shing Luk</b> Aligners- are they invincible? 透明牙套是不是無所不能?	<b>Chairperson</b> Tanan Jaruprakorn 蔡惠美	<b>陳季文 Chi-Wen Chen</b> Communicate with retreatment patients 與再治療患者的溝通	<b>Chairperson</b> Yukiho Tominaga 蔡吉陽
09:15~10:00	<b>蔡士棹 Shih-Jaw Tsai</b> Back on Track: For off-tracking Aligners 隱形牙套的迷途知返	<b>Chairperson</b> Tanan Jaruprakorn 蔡惠美	Kiyoshi Tai Failure contributes to the process of orthodontic success (English Presentation)	<b>Chairperson</b> Yukiho Tominaga 蔡吉陽
10:00~10:30	休息時間 Coffee Break (5F)			
主題 Topic	Failure cases		Retreatment	
10:30~11:15	<b>張慧男 Chris Chang</b> Failure rates of buccal shelf screws and ramus screws Buccal Shelf screws和 Ramus screws的失敗率	<b>Chairperson</b> Takeuchi Yutaka 呂世平	Noriyoshi Shimizu Problems of current orthodontic treatment in Japan and recovery with the re-treatment of the failure cases (English Presentation)	<b>Chairperson</b> Hee Moon Kyung 許為勇
11:15~12:00	Nikhilesh Vaid Orthodontic Treatment: Therapy or Experience? Management Pearls every Orthodontist should know in 2016 (English Presentation)	<b>Chairperson</b> Takeuchi Yutaka 呂世平	<b>廖炯琳 Johnny Liaw</b> What did I learn from "Retreatment" cases? 再治療病例教會我們的事···	<b>Chairperson</b> Hee Moon Kyung 許為勇
12:00~13:00	午餐 Lunch (5F)			



演講地點 Venue	5F萬豪廳 I Grand Ballroom I 5F		5F萬豪廳 II Grand Ballroom II 5F	
主題 Topic	Medical Dispute		Class III	
13:00~13:45	<b>遲玉堃 Yu-Kun Chih</b> Start with Why- Getting Success from Failure Cases 成敗之間- 齒顎矯正治療的 美麗與憂愁	<b>Chairperson</b> Hajime Suyama 蕭孝德	Tatsuo Kawamoto Factors for the long-term stability of Class III surgery -compared with unstable groups- (English Presentation)	<b>Chairperson</b> Martin Reyes 洪清暉
13:45~14:30	<b>蘇志鵬 Chih-Peng Su</b> Easy or Tough Cases with Risks in Orthodontics 齒顎顏矯正治療之難易與醫 療糾紛之探討	<b>Chairperson</b> Hajime Suyama 蕭孝德	<b>劉人文 Eric Jein-Wein</b> Liou Strategy toward failure cases in Class III treatment 處理第三類咬合治療失敗病 例的策略	<b>Chairperson</b> Martin Reyes 洪清暉
14:30~14:45	休息時間 Coffee Break (5F)			
主題 Topic	Failure cases		Class II	
14:45~15:30	林政毅 James Cheng-Yi Lin 許勝評 Sam Sheng-Pin Hsu We should be humble and learn from failure cases 從失敗案例當中學習到病患 教我們的事情:謙卑,謙 卑,再謙卑!	<b>Chairperson</b> 戴文根	<b>George Anka</b> Indecisiveness in Class II open bite treatment (English Presentation)	<b>Chairperson</b> 蘇明圳
15:30~16:15	<b>鄭信忠 Hsin-Chung</b> Cheng The risk management of orthodontic adverse events 齒顎矯正治療「不良事件」	<b>Chairperson</b> 戴文根	<b>張心涪 Hsin Fu Chang</b> The biomechanics for treating Class II malocclusion 治療二級異常咬合的生物機	<b>Chairperson</b> 蘇明圳

械力學

之風險管理

# 特別演講摘要 Invited Speakers 12/3

#### No. 01

# Risk, Responsibility and Resolution

#### **Allan R Thom**



LLM [Medical Law]., BDS., FDS., M'Orth RCS (Eng)., FDS RCS (Edin) Consultant Orthodontist

President World Federation of Orthodontists Past President:-British Orthodontic Society European Federation of Orthodontists. Co-auther books including Guidelines – Orthodontic Radiographs [now in 4<sup>th</sup> Edition]

# The demise of medical paternalism (doctor knows best) and the rise of patient autonomy presents us with new risks.

Risks which may be unexpected from consumer demands and unrealistic expectations.

Recently judges, worldwide, have been more deferential to patient's complaints rather than to realistic clinical explanations.

This has led to a redefining of the understanding of consent

The lecture will examine some of these issues and consider how to avoid pitfalls and manage risk together with addressing the developing legal issues from ever emerging new technology.

## No. 02 Management of Difficult Canine Impactions

#### Abbas R. Zaher



DDS, University of Alexandria 1981 MS orthodontics, University of Alexandria 1986

PhD Orthodontics, University of Iowa, USA and University of Alexandria, Egypt 1992 Visiting Fellow to the University of Iowa USA, 1989 – 91 Professor and Chairman, Department of Orthodontics at the University of Alexandria

- President, the Egyptian Orthodontic Society
- Immediate past Vice-President of the World Federation of Orthodontists
- Founding Member in the Arab Orthodontic Society
- International Member, the American Association of Orthodontists.
- Member of The European
   Orthodontic Society
- Honorary Life Member in the Greek Orthodontic Society
- Fellow in the International College of Dentists
- Invitations to lecturer in

International Universities: St. Louis University, Boston University and Marquette University in the USA, American University in Beirut, Aristotle University and Athens University in Greece, Sydney University in Australia, Pharmacy and Medicine University in Romania, Showa University in Japan, Hong Kong University in Hong Kong, Misr International University and Cairo University in Egypt, Nicolas and Asp institute for advanced dental studies, The European University, The Dubai School of Dental Medicine In the UAE. Warszawski University of Medicine and Jagiellonian University in Poland, Marmara University in Turkey, Riga Stradins University in Latvia, Lithuania University of Health Sciences in Lithuania and Zagreb University. Croatia.

• Presentations in International Conferences:

Beirut in Lebanon, Damascus in Syria, Amman in Jordan, Dubai in UAE, Marrakesh in Morocco, Tunis in Tunisia, Jeddah in Saudi Arabia, Bari and Florence in Italy, Guadalajara in Mexico, Paris in France, Taipei in Taiwan, Warsaw, Krakow, Wroclaw, Poznan and Gdansk in Poland, Sofia in Bulgaria, Athens and Thessaloniki in Greece, Sydney in Australia, Istanbul in Turkey, Kiev in Ukraine, lasi and Bucharest in Romania, Ohrid and Skopje in Macedonia, Lagos in Nigeria, Khartoum in Sudan, Moscow in Russia and



Chicago and Philadelphia in USA, London in the UK

- Publications: Have more than 40 scientific publications in Egyptian and international journals.
- Awards and Honors: Received the Helen and B. F.
   Dewel Clinical Orthodontic Award for the best Clinical Article in the American Journal of Orthodontics and Dentofacial Orthopedics, 1995.

Canines' path of eruption is the longest and most tortuous from the base of the nose to its site at the corner of the mouth. Hence disorders in the eruption of permanent canines are common. Ectopic eruption may lead to various complications like impaction, loss of bone induction, cyst formation and/ or resorption of adjacent roots.

These cases could be encountered in a variety of situations and impaction, transposition and mal position are only examples. The orthodontist is sometimes faced with a variety of treatment options and the decision is usually based on the position and the risk factors.

Orthodontic interference requires careful and extensive investigation in order to plan the suitable orthodontic management. Factors that will help potentiate the success of correction should be carefully considered while planning the treatment of such cases.

The orthodontists should be able to handle and is responsible for dealing with each and all of these issues.

The factors that will influence the success of canine retrieval and

the guidelines to follow for the management of such difficult case will be presented.

#### No. 03

## The Unhappy Patient and the Medical-Legal Issues in Orthodontics: Prevention, Sufferance, Resolution

#### **Chai Kiat Chng**



Dr. Chng Chai Kiat is the Head & Senior Consultant at K K Women's & Children's Hospital

(Singapore), Dental Service and Cleft & Craniofacial Dentistry Unit. He is also a Visiting Consultant Ng Teng Fong General Hospital and Jurong Medical Centre (Singapore). He holds other diverse professional appointments namely:

- Clinical Consultant at Dental Branch, Ministry of Health (Singapore);
- Director, Clinical Head KKH, Clinical Service of SingHealth Duke-NUS ORH-ACP (Oral Health Academic Clinical Program)
- Executive Secretary of the Singapore Dental Council;
- Clinical Lecturer at Faculty of Dentistry, National University of Singapore and;
- Program Director, Centre for Advanced Dental Education,

Fellowship in Cleft & Craniofacial Orthodontics, National University of Singapore

He obtained his BDS and MDS (Orthodontics) from National University of Singapore and MOrtho from the Royal College of Surgeons Edinburgh. He went on to pursue his Fellowship in Clinical Orthodontics from Chang Gung Memorial Hospital (Taiwan)Dr Chng is known for "surgery first" ortho-orthognathic management and the treatment of cleft and cranio-facial patients.

In dentistry, orthodontics is probably the most sought after treatment by a patient that is not suffering from any pain or ailment. It is the this relative elective treatment of most orthodontic treatment that then makes quantifying the improvement gleaned from such treatment difficult and it can become contentious between patient and the orthodontist. In many cases where problems arises in orthodontic cases, often times prevention is always better than cure. In my role as Executive Secretary of the Singapore Dental Council, I have had to manage complaints from the public with regards to poorly managed orthodontic treatment. I hope to share some insights into these cases and hope to make aware of potential problems that we may get ourselves into and the journey to resolution of such medical-legal issues.

#### No. 04

# Biomechanics and Esthetic Based



#### 中華民國齒顎矯正學會 第十五屆第一次會員大會暨學術演講

Taiwan Association of Orthodontists The 29<sup>th</sup> TAO Annual Meeting

## Orthodontic Treatment Strategies

#### **Ravindra Nanda**



Dr. Ravindra Nanda is at present UConn Alumni Endowed Chair, and Professor and Head of the

Department of Craniofacial Sciences and Chair of division of Orthodontics, University of Connecticut, Farmington, Connecticut, U.S.A.

He received his dental training from Lucknow University, India in 1964. He received his orthodontic training first at Lucknow, India and then from Nymegen, The Netherlands and the University of Connecticut. He also received a Ph.D. for the University of Nymegen in 1969. He was an Assistant Professor of Orthodontics at Loyola University, Illinois from 1970 to 1972 and since 1972 he has been associated with the University of Connecticut.

Dr. Nanda has done extensive research during the last forty years in the areas of cleft lip and palate, orthopedic forces and on longterm growth with orthognathic surgery in adolescents. In recent years, his major thrust has been in development of orthodontic wires, clinical orthodontic trials and application of biomechanics in a busy orthodontic practice. Dr. Nanda has been author and coauthor of five orthodontic books and more than two hundred scientific and clinical articles in major journals. He is editor-in-Chief of Progress in

Orthodontics. He is on the editorial board of ten different national and international orthodontic journals. He is an associate editor of Journal of Clinical Orthodontics. He is an active member of various organizations, including the American Association of Orthodontists, European Orthodontic Society and Edward H. Angle Society. Dr. Nanda is a Diplomate of the American Board of Orthodontics. He has given numerous named lectures at national and international societies including Mershon Lecture at American Association of Orthodontics and Sheldon Friel Lecture at 2011 EOS Congress. He has been recognized with various awards from numerous international orthodontic organizations. Dr. Nanda is a co-editor of a book Retention and Stability. His most recent books are Biomechanics in Clinical Orthodontics. Biomechanic and Esthetic Strategies In Clinical Orthodontics, Temporary Anchorage Devices in Orthodontics and Current Therapy in Orthodontics "Esthetics and Biomechanics in Orthodontics. His new book is titled "Complex Orthodontics".

#### Contemporary Management of Openbite Patients

Openbite correction is one of the most difficult malocclusion to correct from the point of view of achieving esthetic goals and long term stability.

This presentation will describe when to extrude anterior teeth and when to intrude posterior teeth.

Various methods to intrude posterior teeth will be discussed.

For extrusion of anterior teeth biomechanics based smart wire will be described.

Various procedures will be shown step by step on patients treated at our department.

#### Acceleration of Orthodontic Tooth Movement: Possibilities and Limitations

This is currently a hot subject in orthodontics. Numerous methods and technologies have been proposed and investigated. At our University of Connecticut we have several ongoing clinical and animal experiments (corticision, vibration and LIPUS) in progress. This presentation will discuss results of some of these studies.



#### No. 05

## Communicate with Orthodontic Retreatment Patients

## 與矯正再治療患者的 溝通

#### Chi-Wen Chen 陳季文



中山醫學大學牙 醫學系畢業 日本國立鹿兒島 大學齒學博士 中華民國齒顎矯 正學會顧問 恆美牙醫診所矯

正專科醫師

矯正再治療患者的心理背景與 動機比初次尋求矯正治療的患者更為 複雜。她/他們最常抱怨矯正醫師不 傾聽她們的提問,沒有能力解決牙齒 的問題,治療期過長又不見效果,醫 師或牙醫助理的粗魯態度。調查報告 顯示溝通不良是造成抱怨與不當治療 的主因,當患者累積相當的不滿情緒 後,轉化成對醫師的不信任感,破壞 醫病關係,一旦患者下定決心轉求其 他醫師接續矯正治療時,再治療患者 就成為每位醫師的難題。這類患者的 共同特徵有心理挫折感或輕微到中度 焦慮的情緒問題,期待早日完成治療 拆除矯正裝置,對牙醫師低信任感高 防衛性,以及牙周炎症,齒列排列不 整等症狀。在初診與諮詢的有限時間 內,矯正醫師必須善用溝通的技巧, 才能化解再治療患者的不滿與焦慮的 情緒,獲取信任,同時避免刺激患者 採取醫療訴訟。再治療是一條心理與 矯正的雙重康復旅程,透過同理心、 諒解與關懷的溝通過程,從安定患者 的情緒開始,重拾對醫師的信任,享 受滿意的治療效果。本報告以臨床實 例說明溝通的重點與技巧。

#### No. 06

## Aligners-Are They Invincible? 透明牙套是不是無所

#### 迈明才 县 定 小 定 黑 所 不能 ?

#### Hoi-Shing Luk 陸開盛



Graduated from U of Connecticut Health Center, USA, combined program of Advanced Orthodontic

Training and Master of Dental Science 1992 Diplomate, American Board of Orthodontics Member, Angle Society of Orthodontist Part-time faculty of Chung Shan Medical University Hospital, Taichung, Taiwan Director, Dr. Luk's Orthodontic Clinic, Taichung, Taiwan Chief Technical Officer of Advanced Dental Group, Chengdu, China 陸開盛齒顎矯正專科診所

Today, we have a very popular topic in our orthodontic world," Transparent Aligners"! Every dentist is exciting because it seems we

can treat our patients simply by sending intraoral scanning files or PVS impression to the company. No lengthy orthodontic trainingis required so everyone is happy. We also learn from the leading speakers who show wonderful cases and how the treatment completed within a short period of time. However, the truth is that transparent aligner is only a tool and not much different from the wire and bracket system. If you believe a particular bracket system can give a better result, then you can have the same wrong assumption about aligners. Good and successful orthodontic treatment is depended on correct diagnosis, good treatment plan, understanding the biology and mechanics of tooth movement. This lecture will include many misconceptions and limitations about aligners. To learn how to master this new tool is the way to success.

#### No. 07

Learning from Cases of Patients Who Wanted Retreatment or a Second Opinion



#### 中華民國齒顎矯正學會 第十五屆第一次會員大會暨學術演講

Taiwan Association of Orthodontists The 29<sup>th</sup> TAO Annual Meeting

#### Kiyoshi Tai



Education: 2015 The Japanese specialist of Orthodontics (Japan Association of

Adult Orthodontics)

2012 Ph.D, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences.

2012 The Japanese qualified orthodontist (The Japanese orthodontic society)

1997 Orthodontic Department of Okayama University Dental school 1992 Prosthetic Department of Okayama University Dental school 1992 Graduated Dental School of Tokushima University

#### Work Experience:

2015~ Visiting clinical professor, Postgraduate Orthodontic Program, Arizona School of Dentistry & Oral Health, Mesa, AZ. 2013~ Instructor of orthodontic

specialty program, Japan Association of Adult Orthodontics (JAAO)

2013~ Instructor of international dental hygienist college in Okayama 2010~15 Adjunct Assistant Professor, Graduate School of Dentistry, Kyung Hee University, Seoul, South Korea.

2009~15 Visiting assistant professor, Postgraduate Orthodontic Program, Arizona School of Dentistry & Oral Health, Mesa, AZ. 2000~ Established private practice Tai Orthodontic Office (Okayama)

#### Honors & Awards:

Joseph E. Johnson Table Clinic Awards (2011, American Association of Orthodontists Annual meeting; AAO)

Failure in Orthodontics encompasses a wide area. It most often occurs when either the doctor or the patient is dissatisfied with treatment results. With this broad definition, every practicing orthodontist is at risk of failure.

Under this definition, I would like to discuss the following cases:

# Case #1: Sinus interferes with space closure.

This patient explained that his former orthodontist had suddenly told that further extraction space closure could be difficult because of interference by the maxillary sinus. The doctor had also suggested to fill up the space with dental materials. This was a great disappointment for him. Can we move a tooth through the maxillary sinus?

# Case #2: Lack of explanation before the treatment

After tooth extraction it was found that the bone was too narrow to start the treatment. The observation showed us that in the right mandibular quadrant two premolars were missing. The Alveolar bone was shrinking, it shows the Seibert's ridge-defect Class I.

Can we move a tooth through an atrophic alveolar ridge?

## Case #3: Wrong timing of the second phase treatment.

This patient explained that it has been six years since her second phase treatment had begun, but her orthodontist didn't allow her to finish treatment because space still existed. For that reason, she visited my clinic to get a second opinion and complained of anxieties about the future.

Can we predict an unfavorable prognosis by the initial cephalometric analysis?

We can lean the following from these case;

- To avoid disappointment we must determine if the improvement of the chief complaint is possible and patient's expectations are realistic before undertaking treatment.
- 2. It is a good opportunity to study and learn about unusual cases from articles describing similar cases or occasions. Even when we have to give up treating a patient, the case can still contribute to knowledge and experience. That is why we can say: "Failure Contributes to the Process of Orthodontic Success".
- It reaffirmed the importance of mutual understanding and communication with the patient to keep the patient's trust. When a patient loses trust, even mild dissatisfaction may lead to medical dispute. Therefore we should always consider the patient's satisfaction.

#### No. 08

Back on Track: For Off-Tracking Aligners 隱形牙套的迷途知返



#### Shih-Jaw Tsai 蔡士棹



Education: DDS, 1999 School of Dentistry, National Taiwanl University

MS,2005 School of Dentistry, National Taiwanl University Board Certification in Orthodontics: July, 2005 Taiwanese Diplomate of Orthodontist 怡登牙醫診所

台大牙醫學士 台大齒顎矯正碩士 衛福部齒顎矯正專科醫師

From time to time, we saw offtracking aligners clinically.

Off-tracking aligners can't deliver optimal force as planed and had adverse effects on teeth alignment. Techniques and tips for bring offtracking aligners back on track will be discussed in this presentation.

#### No. 09

Failure Rates of Buccal Shelf Screws and Ramus Screws Buccal Shelf Screws 和Ramus screws的 失敗率

#### Chris Chang 張慧男



Orthodontist 2. Member, Angle Society Midwest Chapter 3. Publisher,

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International Journal of Orthodontics

- & Implantology
- 4. Founder, Newton's A & Beethoven Orthodontic Center, Taiwan
- 5. Executive producer, Podcast Encyclopedia in Orthodontics
- 6. Author, Jobsology, Co-author, Orthodontics Vol I-IV, Clinical Implant Dentistry I-II
- 1. 中華民國齒顎矯正專科醫師
- 美國矯正學會院士及美國安格學 會會員
- 3. 國際矯正植牙季刊發行人
- 新竹貝多芬矯正中心及金牛頓藝 術科技負責人
- 5. 賈語錄、Orthodontics、Angle case reports等書作者

Failure of temporary anchorage devices (TADs) is a serious limitation when treating complex problems like horizontal impactions of mandibular molars, because there are few other viable options. From a biomechanics perspective, the anterior ramus of the mandible is an ideal insertion site. However, this area appears to be a high risk site because it is covered with thick, mobile soft tissue. This lecture will review some preliminary findings on ramus screws and buccal shelf screws failure rates and discuss the clinical implications.

矯正骨釘失敗在處理複雜的臨床 問題時,是一個重大的難題。特別是 在處理下顎水平阻生齒。因為這個位 置可以植入骨釘的位置選擇不多。從 力學的角度來看,ramus是一個理想 的位置。然而這個位置要面臨到的風 險是有豐厚且不容易固定的軟組織, 增加植入的困難。本演講將報告兩 個初步的臨床研究,分別探討buccal shelf screws和ramus screws的失敗 率,以及對於臨床治療上的影響。

#### No. 10

Problems of Current Orthodontic Treatment in Japan and Recovery with the Re-Treatment of the Failure Cases

#### Noriyoshi Shimizu



D.D.S (Nihon University: 1977), Ph.D (Nihon University: 1982) Professor

and Chairman in Department of Orthodontics,

Nihon University School of Dentistry **Personal history** 

1977 Graduated from Nihon University School of Dentistry 1982 Graduated from Nihon University Graduate School of Dentistry

1982 Research Associate of Nihon University School of Dentistry 1985 Assistant Professor of Nihon University School of Dentistry 1986

~1988 Visiting Researcher, University of Toronto, MRC group in periodontal physiology 1999 Associate Professor of Nihon University School of Dentistry 2003 Professor and Chairman in Department of Orthodontics of Nihon University School of Dentistry 2007 Director of Nihon University Dental Hospital 2013 Vice Dean of Nihon University School of Dentistry 2014 Director of Nihon University

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中華民國齒顎矯正學會 第十五屆第一次會員大會暨學術演講

Taiwan Association of Orthodontists The 29<sup>th</sup> TAO Annual Meeting

Dental Technician School, School of Dentistry

2015 Research in Charge **Membership / Social Activity:** Instructor and Case Examiner of Tweed International Foundation for Orthodontic Research (1997~) Councilor of the Japanese Orthodontic Society (2001~2007) Councilor of the Japanese Society for Jaw Deformities (2008~) Executive Board Member of Japanese Orthodontic Society (2008~)

Executive Board Member of Tokyo Orthodontic Society (2003~) Executive Board Member of Japan Society for Laser Dentistry (2011~) President of the Tokyo Orthodontic Society (2014~2015) President of the Japanese Orthodontic Society (2016~)

There are many patients who hope for a second opinion or re-treatment in our dental hospital. Most of them were the surgical cases with jaw deformity as the result from the long-term multi-bracket, or sometimes mouthpiece type orthodontic treatment. Next many cases were poor improvement of the occlusion, such as insufficient intercuspation, a space remaining here and there in the arches, and recommendation of many tooth prosthesis before completion of orthodontic treatment, further, severe bimaxillary protrusion made by the impossible non-extraction treatment. Even though such cases were continued the treatment at the same clinic, possibility of healing seemed to be thin. Unfortunately, I feel these patients have been increasing in recent years.

When I look at such trouble cases, I have to say that the basic diagnosis and treatment mechanics are ignored and selfish and wrong treatment has been provided. In order to improve reliability of the orthodontic treatment, it is necessary to reduce the number of such unhappy patients by orthodontists themselves. If we do not learn from failure right now, I think a dark cloud will hang over Japanese orthodontic environment. In this lecture, I would like to consider the causes of these troubles by showing re-treatment cases and also discuss the true form of an orthodontist.

#### No. 11

Orthodontic Treatment: Therapy or Experience? Management Pearls Every Orthodontist Should Know

#### **Nikhilesh R Vaid**



Executive committee member: World federation of orthodontists (2015-20) President:

Asian pacific orthodontic society (2014-16) **President:** Indian orthodontic society (2014-15) **Editor in chief:** Apos trends in orthodontics (journal of the asian pacific

(journal of the asian pacific orthodontic society) Member, advisory board: World implant orthodontic association

Orthodontics is a science and art. The fact that it is a profession and a successful business enterprise is often overlooked. This presentation will showcase Orthodontic therapy based on patient centered research and an economic concept called the "Experience Economy ", propagated by Economists Joseph Pine & Gilmore.

The application of the Experience Economy principles to orthodontic care will be detailed.

The learning objectives of the lecture would be -

- 1) Evaluating Patient Feedback by the Q sort methodology
- 2) Experience Economy The Concept
- 3) Application of EE concept to Orthodontic care
- 4) The EE Toolkit for the Orthodontist.

#### No. 12

## What Did I Learn from "Retreatment" Cases?

再治療病例教會我們 的事

#### Johnny Liaw 廖炯琳



DDS, dental department, National Taiwan University MS, Graduate institute of dental and

craniofacial science, Chang Gung University Director, Beauty Forever



#### Orthodontic Clinic

Johnny Joung-Lin, Liaw completed his orthodontic training at National Taiwan University Hospital in 1994 and received his master degree in Chang Gung Medical University. He is now in private practice since 2002. He keeps on lecturing a clinical orthodontic course over 15 years and he is also a part time visiting staff in National Taiwan University Hospital. He served as the President of Taiwan Association of Orthodontists during 2013~2014. Now he is the Immediate Past President of TAO and also the chairman of Taiwan Board of Orthodontics. 台灣大學牙醫學士 長庚大學顱顏口腔醫學所碩士 中華民國齒顎矯正學會理事長, 2013 & 2014 台大矯正科兼任主治醫師 恆美牙醫診所負責醫師

There must be some reasons for the patients to ask for a second orthodontic treatment or even the third. As an orthodontist, everyone should be able to learn something by analyzing the reasons those failed in the first orthodontic treatment. For those doctors who intended to provide the retreatment, further considerations in correcting these problems must be planned very carefully so as not to lead to the next retreatment. The psychological condition of patients should be evaluated for the proper progress of retreatment under an appropriate doctor-patient relationship, which is more vulnerable as a retreatment. Periodontal conditions may need a period of rest or even a comprehensive periodontal care

after removing the pre-existing orthodontic appliance. All the preexisting prostheses should be evaluated for the proper sizes. shapes, angulation, torque and marginal fitness. Any compromise may lead to an unsatisfactory treatment result in the end, even though the orthodontic treatment is completed without problem. The interactions among different sub-specialties need to be addressed with special cautions. The orthodontic treatment plan must be thoroughly informed with special emphasis on all possible complications and any specific issue which may change the original treatment plan and its possible result in the end of retreatment. Communications between the patient and doctors and among the collaborating dental colleagues would be essential foundations of the successful orthodontic retreatment.

#### No. 13

## Start with Why-Getting Success from Failure Cases 成敗之間-齒顎矯正 治療的美麗與憂愁

#### Yu-Kun Chih 遲玉堃



DDS, Department of Dentistry, National Defense Medical Center Certificated

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- Advanced Training Program, Implant Center, Loma Linda University Director, Dental Department, Taoyuan Army Forces General Hospital (2004~2009) Chief Supervisor, Taiwan Association of Orthodontists President, Hsinchu Gloria Dental Clinic
- 1.國防醫學院牙醫學士
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- 3. 中華民國齒顎矯正專科醫師學常務 監事
- 4. 前國軍桃園總醫院牙科部主任
- 5. 新竹九歌牙醫診所負責醫師

沒有人天生是贏家,我們每天 診療病人都面對失敗的風險,曾有矯 正界的前輩說,如果有醫師告訴你他 從來都沒碰過醫療糾紛,那代表他出 道的時間還不夠長。由於職務上的關 係,臨床上常會碰到及協助處理一些 糾紛的病例,根據個人的觀察,有些 醫療糾紛是可以避免的;充分的溝 通,設置停損點,從失敗中取得教 訓,邁向成功之道,是這次分享的主 軸。如果糾紛不幸發生,如何將傷害 減到最少,也是本次演講內容之一。

找尋初衷,與君同行,希望藉由 此次演講能帶給各位會員醫師不一樣 的收穫。

#### No. 14

Factors for Long-Term Stability of Class III Surgery: Comparison with Unstable Group



#### **Tatsuo Kawamoto**



Professor and Chair, Division of Orofacial Functions and Orthodontics Department of Health

Improvement Faculty of Dentistry, Kyushu Dental University

#### **Career History**

1988 DDS, Tokyo Medical and **Dental University** 1992 PhD, Graduate school Tokyo Medical and Dental University 1992-2000 Hospital staff at 2nd Department of Orthodontics, Faculty of Dentistry, Tokyo Medical and **Dental University** 2000-2010 Assistant Professor, Maxillofacial Orthognathics, Graduate School Tokyo Medical and **Dental University** 2010-2015 Junior Associate Professor. Maxillofacial Orthognathics, Graduate School Tokyo Medical and Dental University 2012-2013 Visiting Research Fellow, Orthodontics and Craniofacial Biology, Radboud University. Nijmegen Medical Centre 2015- Professor and Chair, Orofacial Functions and Orthodontics, Kyushu Dental University

When choosing a therapeutic strategy for mandibular protrusion, it is important to consider both shortterm results and long-term stability. More than 30 years ago, patients with mandibular protrusion began to undergo orthognathic treatment in Japan. Orthognathic treatment was included in Japan's health insurance system, which covers all citizens, in 1996, and the number of patients undergoing such treatment has thus increased. In recent years, the number of patients for whom it is possible to assess the long-term prognosis has also increased.

Actually, most patients achieve long-term stability. Those with instability relapse and develop malocclusion such as an open bite, facial asymmetry, and crowding, even if their short-term results were acceptable. Studies of the factors for long-term stability may need to consider each pretreatment craniofacial pattern and the changes that occur during treatment, as do studies of the factors for short-term results.

With respect to the operative procedure, patients with mandibular protrusion and an open bite or long face must undergo superior repositioning of the maxilla to improve the stability by preventing anticlockwise rotation of the mandible. Although such repositioning of the maxilla is not easy by Le Fort I osteotomy, some research suggests that a combination of Le Fort I and horseshoe osteotomy is a useful technique for reliable superior repositioning of the maxilla, especially in its posterior portion, and shows no difference in shortterm results compared with Le Fort I osteotomy.

The aim of this speech is to compare an unstable group with a stable group in terms of the mediumand long-term craniofacial changes after orthognathic treatment for mandibular protrusion and assess factors for long-term stability with respect to the following:

1. Craniofacial pattern and long-

term stability

2. Operative procedure and medium-term stability

#### No. 15

## Easy or Tough cases with Risks in Orthdontics 齒顎顏矯正治療之難 易與醫療糾紛之探討

#### Chih-Peng Su 蘇志鵬



1. Advisor of TAO and TOS 2. Clinical professor of Taipei Medical University, Taiwan

- 3. Visiting associate professor of Showa University, Japan
- 4. PhD of Showa orthodontic department, Japan
- 5. Professional Orthodontic Clinic, Taipei, Taiwan

齒顎顏矯正治療的主要目即 是利用矯正的知識與技術,預防 或/及改善患者牙齒、齒列及異 常咬合的現象,並恢復口顎系統 (stomatognathic system)的正常 機能且穩定之。並在條件許可下,改 善上、下顎骨的關係及顏面之靜態與 動態的審美觀,進而達到患者的身心 健康及良好的社會適應之能力。

臨床上,異常咬合的診斷 歸可類納為:(1)心理性/社會 性的問題(2)下顎骨靜態與動態 的問題(static and functional problems):下顎骨的習慣性姿勢 (habitual posture)、下顎骨的偏 移(mandibular deviation)、下顎 骨的位移(displacements)及顳顎



關節症(TMD)等(3)軟組織的靜態 與動態之問題 :a.顏面:臉型、對 稱性、鼻子、嘴唇、臉頰、下巴、 顴骨、腮幫子等b.口內:舌頭、舌 唇繫帶、牙周組織、呼吸道、淋巴 組織、發音、吞嚥及口腔習癖(oral habits)與口呼吸等之異常(4)硬組 織的問題:上下顎骨的關係、咬合與 牙齒及齒糟骨之異常等(5)其他的問 題(免疫系統、體能狀態、生活作息 與睡眠等)。

一般而言,牙齒的移動並非難 事,反而是上述的其他相關問題會影 響齒顎顏矯正治療的結果與穩定,而 這也極易造成醫療糾紛的問題。臨床 上,除了應循常規性的診斷與治療的 問題外,過程中也應避免觸犯「應告 知能告知,而未告知」與「應注意能 注意,而未注意」的兩大法理原則。 並對在他處診治且有不滿之患者尋問 時,應告知醫療問題的發生極少是單 一原因,反而大多數是多重性原因 (multi-factors)所引起。因根據醫 療保險統計的結果,醫療糾紛的成立 大都是「醫醫相害」之違反醫學倫理 的後果所造成。

本次報告的目的即是以臨床病例 來探討齒顎顏矯正治療之難易與醫療 糾紛之問題。

#### No. 16

What Could We Do If We Fail: Strategy toward Failure Cases in Class III Orthopedic or Orthodontic Treatment 處理第三類咬合治療

失敗病例的策略

#### Eric Liou 劉人文



Dr. Eric Liou is an associate professor and the chairman of the Faculty of Dentistry, Chang Gung

Memorial Hospital & Chang Gung University, Taipei, Taiwan. He is also a visiting professor in the

Department of Orthodontics, Showa University, Tokyo, Japan. For the profession affiliations, Dr. Liou is currently president of the Taiwan association of Orthodontists, and president of the World Implant Orthodontic Association. His main research interests are distraction osteogenesis, TADs, orthodontic tooth movement, platelet rich plasma, and bone physiology. Dr. Liou has numerous publications and presentations, specially on the topics of accelerated orthodontic tooth movement, maxillary orthopedic protraction, surgery first accelerated orthognathic surgery, and TADs.

Current non-surgical modalities for the treatment of growing or adult patients with Class III malocclusion include maxillary orthopedic protraction, orthodontic treatment by extraction/non-extraction with/ without TADs, or stepwise backward rotation of mandible (a posture change of mandible to improve facial profile). These modalities usually aim to treat patients with one single treatment modality, such as maxillary orthopedic protraction aiming on a real orthopedic repositioning of maxilla, and orthodontic treatment on sagittal

movement of upper and lower dentitions for the improvement of occlusion but seldom on the changes of lip posture, chin projection, and chin-throat length. And each of these treatment modalities has its own limitations and risk of failure. Not any single treatment modality could avoid failure. The question is what we could do if we fail. This presentation aims to comprehensively illustrate the concept of combining more than one modalities in treatment of growing patients with Class III malocclusion, and decision making procedure for either extraction or non-extraction therapy in adult patients with Class III malocclusion by analyzing the lower lip posture, chin projection, and chin-throat length to deal with the failures. The use of stepwise backward rotation of mandible for solving both occlusion and facial profile when we fail also will be presented.

#### No. 17

We Should Be Humble and Learn from Failure Cases 從失敗案例當中學習 到病患教我們的事 情:謙卑,謙卑,再 謙卑!



#### James Cheng-Yi Lin 林政毅



Dr. Lin is a Clinical Assistant Professor at the School of Dentistry at the National

Defense Medical University of Taipei, Taiwan. Dr Lin's main fields of interest focus on TADs-based orthodontics, Clear aligner treatment and Esthetics-driven interdisciplinary dentofacial treatment (E-IDT). Dr. Lin has published many articles in refereed journals such as American Journal of Orthodontic and Dentofacial Orthopedics, Journal of Clinical Orthodontics and Journal of the Taiwan Association of Orthodontics. He also authored or co-authored 4 book chapters concerning TADs-based orthodontics.

#### Sam Sheng-Pin Hsu 許勝評



Assistant Professor, Department of Craniofacial Orthodontics, Chang Gung Memorial

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長庚醫院顱顏齒顎矯正科助理教授 Fellowship, Surgical Planning Laboratory, Department of Oral and Maxillofacial Surgery, The Methodist Hospital Research Institute, Houston Texas

美國德州醫學中心3D手術矯正模擬 臨床研究

Chairman, Academic Committee, Taiwan Association of Orthodontists 中華民國齒顎矯正學會學術委員會主 委 每個人都必定經歷過失敗的打 擊,其實失敗並不可恥,最重要的事 情是到底我們從失敗當中學習到了甚 麼,以及如何重新調整再出發。本次 報告將就某些臨床上常見的錯誤認 知,失敗原因和罕見案例提出治療心 得與檢討,跟與會醫師們一同分享失 敗的甘苦經驗談。

## No. 18 Indecisiveness in Class II Open Bite Treatment

#### **George Anka**



He entered Northwestern University, Chicago, USA from 1979-1981 for his Orthodontic

training, where he received Master of Science Degree 1981 at the same institution.

In last 15 years he lecturing intensively in Japan and all over the World in major meetings, wrote and published scientific articles National, International Journal and Text Book. He is maintaining a private practice in Tamashi, Tokyo, Japan. At present he is a Member of Implant Orthodontic Conference Committee of Japan and

Advisory Committee of World Implant Orthodontic Conference

The correction of an open bite is still considered to be one of a headache in clinical orthodontics; it has strings of decisions making involved in many areas when comes to the question of stability. The retention, the end of treatmentconfidencewill start with a question of how we begin with the case selection. It begins with whether the case should be corrected orthodontic alone or orthognathic surgery. The worst scenario when it comes to a fact that even after surgical orthodontic the case is still not stable.

The surgery versus camouflage will be discussed, and if any existing datato prevent an approach that might trigger the risks of unrealistic expectations.

The value of oral function rehabilitation will be presented. The last question: whether muscle dictates form or vice versa.

#### No. 19

## The Risk Management of Orthodontic Adverse Events 齒顎矯正治療「不良 事件」之風險管理

#### Hsin-Chung Cheng 鄭信忠



School of Dentistry, Taipei Medical University, Taipei Orthodontic division,

Department of Dentistry, Taipei Medical University Hospital, Taipei 台北醫學大學牙醫學系暨研究所 附設醫院牙科部齒顎矯正科

From the past literatures review on the medical errors showed



that there existed high potential risks in medical environments. The prevalence rates of medical adverse events were surveyed from 2.9% to 16.6% (average 10%) in western countries. The World Health Organization also proposed the basic methods for decreasing medical errors and the Joint Commission International developed the International Patient Safety Goals that were based on the hospital accreditation respectively in the past ten years.

In Taiwan, Ministry of Health and Welfare and Joint Commission of Taiwan have begun established the national patient safety goals and added the goals numbers from five to ten since 2004. The new systems of hospital accreditation in Taiwan were also developed mainly on patient safety. Therefore, the risk management in medicine and the patient safety issues have been the main concern and tendency in the world.

The Taiwan Hsin-Kong medical insurance company reported that there were 42 cases of dissatisfied orthodontic results and 26 cases of delay orthodontic treatment time in the analysis of insurance claim cases survey from 2004 to 2009. Although the orthodontic treatments have been considered to be the safest treatment, a few of legal cases were still noted and the potential risk of orthodontic treatment should not be ignored.

This report will introduce the risk management of orthodontic treatment according to the patient safety ideal and how to prevent the adverse events on orthodontic treatment. I will also share my adverse cases that I treated in my past 30 years of orthodontic career and give some tips for prevention of the risk on orthodontic treatment.

#### No. 20

## The Biomechanics for Treating Class II Malocclusion 治療二級異常咬合的

## 生物機械力學

#### Hsin-Fu Chang 張心浩



Orthodontist

Associate professor of National Taiwan University Consultant of Taiwan Association of

Adviser of Taiwan Orthodontic Society 台大醫院齒顎矯正科主任 中華民國齒顎矯正學會前理事長 中華民國齒顎矯正矯正學會顧問

治療II級異常咬合且合併有前齒 唇突的病患時,設計一個有效率的力 量系統非常重要。目前臨床上仍不時 碰到此種類型病例治療結束後,上顎 門齒太往舌側傾斜,不但影響病患的 顏面和牙齒美觀,病患更常抱怨顳顎 關節疼痛,而前來門診希望能將門齒 推往唇側,改善不雅的顏貌外觀。本 次報告將提出有關此種類型不當治療 的八個病例,以及本人遇到此類型病 例時,是如何設計力量系統以有效地 控制其前齒移動。

# 貼示海報 Poster Presentations

No.	Author	Title
1	Liu Yin-Ting, Yu-Chuan Tseng	Treatment of bimaxillary dentoalveolar protrusion with asymmetric extraction using miniscrews
2	Wen-Hsin Niu	Maxillary molar protraction in Sinus proximity region – is lower sinus floor become an obstacle? - case series
3	蕭名智、周勵助、陳廣興、李忠興	Etiologic Treatment of Impacted Maxillary Central Incisor
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#### No. 01

## Treatment of Bimaxillary Dentoalveolar Protrusion with Asymmetric Extraction Using Miniscrews

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#### Objective

Miniscrews can be a useful alternative to conventional orthodontic anchorage, especially in cases with asymmetric extractions. The miniscrew is simple, easy to apply, effective and provides maximum anchorage in the horizontal direction and offers good vertical control.

#### Case

This case was a 24-year-old female, with chief complaint of bimaxillary protrusion and the broken left maxillary first molar porcelain crown. The diagnosis was distal jaw relation with chin deficiency, hyperdivergent facial pattern, and Angle Class II bimaxillary dentoalveolar protrusion. The treatment plan included extractions of right maxillary first premolar, left maxillary first molar, and both mandibular first premolars, and implantation of the miniscrews in right infrazygomatic crest area and left maxillary tuberosity area to enhance anchorage. Good facial esthetics was achieved after treatment.

#### **Discussion and Summary**

The anchorage control in the cases with asymmetric extractions was difficult. We use miniscrews to obtain the good treatment result.

### No. 02

## Maxillary Molar Protraction in Sinus Proximityregionis Lower Sinus Floor Become an Obstacle? - Case Series

#### Wen-Hsin Niu

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In recent years, more and more adult patients seek for orthodontic treatment because of prosthetic problems, these patients might ask orthodontists to close the extraction space by orthodontic treatment to avoid further fabrication of prosthesis like dental implant or fixed partial denture. Based on statistics, maxillary molars were more prone to have caries or periodontal problem than most of other teeth, so the chance of missing of maxillary molars could be increased. After maxillaryposterior teeth extracted, the functional forced transmitted from occlusion was decreased, the subsequent bone atrophy could happened by

more bone resorption than bone remodeling during the process of extraction socket healing, it will caused alveolar ridge atrophy and maxillary sinus pneumatization. Literature reported about 1.83-2.18mm downward expansion of maxillary sinus in four to six months after extraction; the healing process will be stabled by cortical bone remodeling on the inner surface of the sinus. When trying to close the edentulous space with orthodontic force, orthodontists will not only face the narrower ridge but also the proximity of the sinus. There has been deputing on whether the lower sinus floor would make space closure more difficult, especially in cases need maxillary molar protraction, even more, some might say it would cause more root resorption or even loss of tooth vitality. In this case series, we simply reviewed somecases of maxillary molar protraction in low sinus floor region; the mechanics, protraction amount and the rate of tooth movement will be presented in detail.

## No. 03 Etiologic Treatment of Impacted

## Maxillary Central Incisor

**蕭名智'、周勵助、陳廣興、李忠興** 三軍總醫院齒顎矯正科

Once teeth erupt into the oral cavity, two-thirds of root length is completed and spontaneous eruption may be expected in time.

The impacted tooth which is not expected to erupt into a reasonable time in these circumstances. Studies have shown that conservative treatment by creating space or surgical exposure with orthodontic alignment is indicated. In this case report, we presented a patient with impacted right maxillary central incisor received etiologic treatment to its proper position in the dental arch.

A 9-year-old boy suffered from the impaction of the immature right maxillary central incisor (inadequate available volume on the arch). Initially, it was decided to allow the impaction tooth to spontaneous eruption due to open apex and acceptable root form. Space regain was performed by local orthodontic treatment. Following six months of monitoring, there was no clinical evidence of spontaneous eruption (poor eruption potential). Therefore, orthodontic traction was initiated. The surgical exposure was performed by intrasulcular incision and alveolectomy. One year after the beginning of orthodontic traction, the position of the impacted right maxillary central incisor was leveled with the dentition. After 6 months follow up, no clinical or radiographic pathology was detected.

In fact, spontaneous eruption is the ideal choice for an impacted tooth due to the reduce gingiva recession and bone remodeling. However, there is no eruption potential in this case. Surgical exposure should not be delayed to avoid further development in aligning the tooth into the arch. Etiologic treatment for dental impaction is a complex procedure on account of the wide range of cases encountered and the difficulty involved in making a precise and, most importantly, an early diagnosis and adequate treatment plan.

#### No. 04

## A Case Report: Vertical Control in Four Bicuspid Extraction Case

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Modern treatment goals in orthodontic therapy have changed from Angle paradigm into an new arc, soft tissue paradigm. Angle's ideal occlusion is no longer the major concern, while soft tissue relationship and adaptations become the primary goal of treatment.

Protrusive lips are a common chief complaint in Asian, and four bicuspid extraction is an usual strategy in orthodontic treatment thereafter.

A 17 years old girl has lip incompetence and protrusive profile, and four bicuspid extraction was done to achieve better soft tissue profile. Vertical control is an important issue in extraction therapy. A transpalatal arch was used for posterior vertical control and wire bendings were used for anterior component. An acceptable soft tissue outcome is achieved, nevertheless, the root parallelism and dental midline are still unsatisfied.

#### No. 05

## The Orthodontic Management of Cherubism in a Growing Child

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#### Objective

Cherubism is a rare non-neoplastic disease that affects the jaws. Hyperactivated osteoclastic remodeling contributes to the change of normal bone to fibrous tissue and cyst-like lesion formation. The disease also affects the normal tooth eruption, occlusion and function of the dento-alveolar complex. This case was reported by using surgical exposure with traction to impacted teeth, and full mouth orthodontic treatment to establish occlusion.

#### Case

The case of a 9-year 4-monthold had cherubism with bilateral facial swelling without pain. The radiographic film showed the lesion involved posterior of maxilla and



mandible. The patient presented with permanent premolars and molars ectopic eruption and impactions. Four molars were extracted because of poor development on right upper and left lower 1st molar, root resorption of left upper 1<sup>st</sup> molar and right lower 2<sup>nd</sup> molar with inverted eruption. We used Nance appliance and lingual holding arch as anchorage to tract the impacted teeth (left lower 2nd premolar and 3 2<sup>nd</sup> molars) in first and second stage treatment. Finally, the patient's malocclusion was corrected by full mouth fixed appliance. The total treatment time is seven years and eight months.

#### **Discussion and Summary**

Approximately 200 cases have been reported with the majority being males. The effects of SH3BP2 mutations are still under study. The disease is usually diagnosed when dental abnormalities are found. Orthodontic treatment may be used to help erupting permanent teeth that have been unable to descend due to lesions and cysts being in their path of eruption. Surgical recontouring of the jaw is sometimes advised in teenagers with large, bulky and aesthetically deforming. Because cherubism changes and improves over time the treatment should be individually determined. The carefully treatment and cooperation with oral surgeon was an important key to achieve proper outcome.

#### No. 06

## A Ten-Year Growth Observation

## of Interceptive Non-Extraction Orthodontic Treatment with Rapid Maxillary Expansion – A Case Report

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#### Objective

Treatment options of maxillary anterior teeth crowding in growing patient include extract permanent premolars or expand arch perimeter to create space for alignment. Rapid maxillary expansion eliminates mild to moderate crowding problem effectively without jeopardizing the integrity of dentition and facial profile.

#### Case

An 8 years old girl with moderate crowding in upper anterior teeth in the late mixed dentition asked for orthodontic consultation. After a twoyear follow up, blocked-out maxillary lateral incisors and canines could be seen in the early stage of permanent dentition. Potential Class III skeletal pattern was also observed. Treatment started at 10 years old during her growth spurt stage, Hyrax were used to relief crowding of upper dentition. After 3 weeks of rapid maxillary expansion and 5 months of retention, Hyrax was removed and then replaced by full mouth fixed appliance. Class III inter-arch elastics were used for 6 months after initial leveling and

alignment. At age 14, treatment was finished after 3.5 years. During the next 4 years of post-retention period, there was no significant relapse of dentition, however, her mandible remains growing in both sagittal and transverse dimensions.

#### **Discussion and Summary**

In the presence of rapid maxillary expansion appliances, extraction is no longer the primary concern for relief crowding during late mixed/ early permanent dentition. Her measurements of body height and cervical vertebrae staging would be reliable to evaluate whether it is her growth spurt or not. Treatment planning for children and teenagers is important, especially in patients with potential mandibular prognathism.

#### No. 07

Non-Surgical Correction of Severe Skeletal Open-Bite Malocclusion with Temporomandibular Joint Disorder-Case Report

#### Lee Hsuan Sean<sup>1</sup> Wang Lien-Chi<sup>1</sup> Alex Yunn-Jy Chen<sup>2</sup> Yao Chung-Chen Jane<sup>1</sup>

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#### 中華民國齒顎矯正學會 第十五屆第一次會員大會暨學術演講 Taiwan Association of Orthodontists

The 29<sup>th</sup> TAO Annual Meeting

#### Objective

The treatment objectives were: (1) correction the severe anterior open bite, (2) relief of crowding, and (3) establishment of a functional occlusion

#### Case

Here, we report a nonsurgical orthopedic treatment of a 23-yearold female with TMJ disorder and severe skeletal anterior open bite, dental Class II malocclusion with high mandibular plane angle. The patient suffered from TMD with severe anterior open bite, clinical overjet/ overbite measuring 10/ -4 mm, respectively. She was initially treated with an occlusal splint to stabilize condyles in centric relation and to alleviate TMD signs and symptoms. After achieving stable occlusion and condylar status, orthodontic treatment was then initiated. Upper anterior teeth retraction and molar intrusion were achieved by bilateral upper first premolar extraction and titanium miniplates insertion at bilateral zygomatic buttresses. Lower anterior teeth crowding was relieved through total arch distalization using mini-screws at bilateral mandible buccal shelf. Without the suffering of surgery, severe anterior open bite was corrected, ideal overjet/ overbite relationships and functional occlusion were achieved with a stable long term 5-year follow-up result.

#### **Discussion and Summary**

Skeletal anterior open bite is a complex and multifactorial anomaly. Most common etiologies involve skeletal abnormal growth, TMJ disorders, dental, soft tissue, and habitual factors. Various treatment modalities for open bite correction include, occlusal adjustment, tooth extraction, molar intrusion with absolute anchorage system and orthognathic surgery. Although correction by surgery may be effective and stable, many patients refuse surgical treatment for the costs and risks. Recently, numerous reports/ studies have shown success in treating skeletal open bite utilizing temporary anchorage devices. We hereby demonstrate a successful nonsurgical orthopedic treatment of a patient with TMJ disorder and severe skeletal anterior open bite with long term stable results.

#### No. 08

## Full Mouth Rehabilitation Through Orthodontic, Periodontal, and Implant Treatment

#### Po-Sung Fu<sup>1</sup> Yi-Min Wu<sup>2</sup> Yu-Chuan Tseng<sup>3</sup> Chin-Huang Tseng<sup>4</sup>

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#### Objective

Oral rehabilitation of patients with multiple congenitally missing teeth is challenging and often needs an interdisciplinary approach. Orthodontic, surgical, and prosthetic treatment options of patients with congenitally missing teeth are mainly dependent on the number of teeth to be replaced and individual considerations. This article describes an interdisciplinary approach including orthodontic, periodontal, prosthetic, and implant treatment for a hypodontia young adult. Treatment considerations and sequences are depicted in details.

#### Case presentation

A 20-year-old male, with congenital absence of five premolars sought treatment for the edentulous spaces and improvement of masticatory function. Review of the patient's medical, dental and family histories revealed no significant findings. He had no history of trauma and extraction of any permanent tooth. The patient presented a Class II, division 2 malocclusion and a straight profile. Mild chin deviation to right side was detected. Pretreatment panoramic and cephalometric radiographs revealed the absence of five premolars with tilting of their adjacent teeth and overeruption of the unopposed teeth. Bimaxillary retroclination of incisors, linguoversion of the right mandibular third molar and severely atrophic edentulous ridges were also observed. The treatment plan included orthodontic uprighting of the tilting teeth, deep bite correction, overerupted teeth intrusion, reasonable space closure, alveolar



ridge augmentation, and implant installation into the developed sites. Finally, three implantsupported crowns were fabricated to reconstruct the remaining space.

#### **Discussion and summary**

Early diagnosis of patients with hypodontia and comprehensive treatment planning are key factors for successful rehabilitation. The type of malocclusion, degree of hypodontia, age of the patient, and psychosocial aspects should be carefully evaluated before treatment. The primary goal of orthodontic therapy in hypodontia patients is to minimize and consolidate edentulous spaces. If implant-supported restorations are planned, the objective is to use minimal number of implants without compromising the facial profile, function, and dental esthetics. Besides, orthodontic treatment can improve certain alveolar bone defects and attain root parallelism adjacent to the scheduled implant site. In brief, an interdisciplinary approach with proper treatment sequence is necessary to achieve functional and esthetic outcomes.

#### No. 09

Treatment Approach to Dentofacial Deformities in a Long-Term Survivor of Head and Neck Rhabdomyosarcoma after Radiation Therapy

Tsai HJ<sup>1</sup>

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#### Objective

The radiation and chemotherapy of head and neck malignant tumor in young children resulted in longterm abnormalities including facial asymmetry, tooth agenesis, and disturbance in root development. This case was reported by using orthognathic surgery, bone graft and soft tissue augmentation to correct facial asymmetry and maxilla depression.

#### Case

This case was a 19 year male who was a victim of L't buccal rhabdomyosarcoma and received radiation and chemotherapy at aged 4. The diagnosis of the patient was skeletal class III, facial asymmetry with chin deviation to left side 7mm, malar depression, hypodontia and abnormal root formation. The treatment of orthognathic surgery with musculocutaneous flap reconstruction was suggested after consultation with plastic surgeon's department. 3-D navigation system was used to achieve optimal symmetry plane and proper occlusion for the surgery planning. There were 4 times of surgeries included. The first approach was

maxillary Lefort I osteotomy and mandible BSSO with bone graft harvested from outer cortex of bilateral mandible. The second approach was left free scapula flap to reconstruct the left malar depression. The last two surgeries were defatting procedure. The satisfactory result was presented after the operation with harmony appearance and stable occlusion.

#### **Discussion and Summary**

Rhabdomyosarcoma is an aggressive and highly malignant form of cancer that develops from skeletal muscle cells. It is generally considered to be a disease of childhood and patient outcomes vary considerably. The radiation and chemotherapy of head and neck malignant tumor can result in dentofacial abnormalities that affect the patient's quality of life. In conclusion, the care of the long-term survivor requires a multidisciplinary approach, including orthodontist and combination of different departments. The comprehensive treatment planning and meticulous surgical technique was an important key to achieve ideal outcome.

#### No. 10

## Force Eruption of Maxillary Canine Impaction- A Case Report

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中華民國齒顎矯正學會 第十五屆第一次會員大會暨學術演講 Taiwan Association of Orthodontists

The 29<sup>th</sup> TAO Annual Meeting



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#### Objective

In this case report, we try to simplify the orthodontic method to force erupt the impacted canine and correct the deep bite simultaneously.

#### Case

This is a 16-year-old boy and his chief complaint is canine impaction over his left maxilla. Spacing over both dental arches and deep bite were also noted. The diagnosis is skeletal class I malocclusion with deep bite and canine impaction. The treatment plan options are: 1. Full mouth orthodontic treatment: non-extraction with TAD-assisted (temporary anchorage device) if needed 2. Local orthodontic treatment: forced eruption 3. Extraction of #23 and replacement of #23 with prosthesis. The final treatment plan is non-extraction full mouth treatment with TAD-assisted if needed. He received the exposure surgery and bonding bracket of #23under general anesthesia. After the leveling and alignment, we started to extrude the impaction with power chain combined with spring to regain space for it. Simultaneously, we also used 0.16x.025 NiTi reverse arch wire for bite opening. When the position of canine being closer to occlusal plane, we used laser to remove gingiva over the canine. We used triangle elastics (3/16", 2oz) for keeping on extruding #23. When the impaction finally erupted into its normal position, we bonded lingual button at its mesial side and made a resin button over its distal side with elastics for providing a couple to correct its rotation. Finally, we

succeed in correcting the canine position and got into finish stage. We re-bonded brackets, levelled and closed the residual space in arches. Nowadays this case is in finishing stage by triangle elastics for occlusion settling down.

#### **Discussion and Summary**

We encountered two difficulties during the procedures. One is that canine didn't move when we applied the force on it. The radiographic data showed that the canine did not have enough space to erupt and was stuck by adjacent teeth. Therefore, we closed the space over right upper arch and used spring to create space for canine. The other problem is that the canine rotated 90 degrees over the alveolar bone. We used a couple to correct the situation. But in the beginning the canine did not move for 3 months. The dental crown of canine stuck by cortical bone was suspected. Thus we gradually increase the force. It took us for 9 months for correct its rotation. Mild root resorption was noted. Force eruption of canine is really a challenging and interesting work. Its position, bone volume, the condition of adjacent teeth, eruption pathway should be taken into consideration.

#### No. 11

Camouflage Orthodontic Treatment of Skeletal Class III Relationship with Hypo-Divergent Facial Pattern

#### **Lin-Chin Chou**

Division of Orthodontics, Wan Fang Medical Center, Taipei, Taiwan

Treatment of classIII malocclusion involves many aspects, such as orthognathic surgery, camouflage orthodontic treatment and growth modification.There are three crucial considerations of camouflage treatment - 1.Functional shift 2. Profile 3. Molar relationship.

The 18y/o girl showed skeletal class III relationship with hypo-divergent facial pattern, anterior cross-bite, and deep bite. The modality of camouflage orthodontic treatment is the compromise ofthe torque of U1/L1 by flaring the U1 and tipping the L1 to lingual side. We used RPE, inclined plane and chin-cap to increase the vertical dimension and clockwise rotation of the mandible. After the active treatment, stable occlusion and well alignment have been achieved, and patient is satisfied very much.

## No. 12 Evaluation of the Changes after Surgery-First Approach Orthodontic Treatment

Yu-Liang Lin Yun-Yun Wu Jui-Hsien Yang Orthodontic department, Cathay General Hospital

Surgery combined orthodontic treatment was considered to be



one of the most effective methods for adult patients with bimaxillary protrusion. It is important to evaluate the profile change during and after the treatment. In this case, a 22 year-old male presented bimaxillary protrusion and mild Class III dental relationship. He had an anterior open bite of 5mm. The profile of this patient was convex with procumbent lips. Considering the acceptable posterior occlusion, anterior subapical osteotomy on both arches combined with orthodontic treatment was elected. Post-surgery results showed great improvement of skeletal discrepancy and facial profile. Favorable changes continued to occur during final orthodontic adjustment. This satisfactory result demonstrates the treatment protocol can be performed on patients with similar malocclusion.

#### No. 13

## Treatment of Patients with Malocclusion of Anterior Teeth Deep Bite and Flaring out by Using Modified Intrusion Arch Mechanism

#### **Chun-Liang Kuo**

Department of Orthodontics, Chi Mei Medical Center, Tainan City, Taiwan Center for General Education, Southern Taiwan University of Science and Technology The treatment of anterior teeth deep bite can usually be divided into two categories: 1. Intrude the anterior teeth. 2. Extrude the posterior teeth. If the patient has a large interlabial gap, gummy smile and gingival margin of the anterior teeth closer to the occlusal plane, it is recommended intrude the front teeth to correct deep bite problems. This report proposes an modified intrusion arch mechanism, which uses a 0.016" Australian round wire engage into four front teeth of the Tip-Edge Plus brackets and simultaneously adds Class I elastics, they will intrude and retract anterior teeth in the same time.

#### No. 14

## Interdisciplinary Orthodontic Treatment in Prosthodontic Rehabilitation: A Case Report

#### Chia-Lin Wu Jen-Bang Lo Chin-Shan Chang Jia-Kuang Liu

Institute of Oral Medicine, National Cheng Kung University, Tainan, Taiwan

Department of Stomatology, National Cheng Kung University Hospital, Tainan, Taiwan

#### Objective

This case report presents the interdisciplinary issues that are involved in pre-prosthodontic orthodontic treatment for placing and restoring implants patient.

#### Case

This 50-year-old man came to prosthodontic rehabilitation due to multiple teeth missing. Tooth 22, 35, 36 and 46 was missing, and 37 47 was mesial tipping. So he was referred from Department of Prosthodontics for pre-prosthodontic orthodontic treatment. Under clinical examination, he had normal overjet and deep overbite. Bilateral upper first molars were supra-eruption and lower second molars were mesial tipping due to lower first molar missing. Severe attrition over lower incisor area and buccal crossbite at left premolar area were also noted. Cephalometric examination showed skeletal Class I and ortho-divergent. So the treatment plan was full mouth orthodontic treatment by using fixed appliance to correct deep overbite and buccal crossbite, 16 26 intrusion and 37 47 uprighting. Tooth 23 was planned as a substitute of 22. Lower right was created 7mm space and lower left was created 14 mm space for implant therapy and to establish stable occlusion. Lower incisor attrition area was restored with OD treatment. In this case, omega loop mechanics was used to gain space for implant therapy and buccal crossbite was corrected by cross elastics. After three years orthodontic treatment, implants were inserted. Then, debanding and debonding was performed and final prosthodontic rehabilitation was achieved. Patient was very satisfied of the outcome.

#### **Discussion and Summary**

A successful interdisciplinary treatment was based on a good communication between different



specialists. Orthodontists, surgeons, and restorative dentists must work together to produce an excellent result. Without interdisciplinary interaction, the final esthetic and functional results may be unacceptable. With a team approach, management of orthodontic-prosthodontic treatment becomes more predictable and successful.

#### No. 15

## Long-Term Follow-Up after Using Rigid External Distraction to Change the Cleft Lip and Palate Girl's Life

#### Yu-Jen Chang<sup>1</sup> Jui-Pin Lai<sup>2</sup> Shiu-Shiung Lin<sup>3</sup>

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#### Objective

All orthodontists and plastic surgeons know the benefit of Rigid External Distraction treatment, however, fewer and fewer patients receive this treatment in recently years. We hope this report can reminder doctors the useful treatment for cleft lip and palate patients.

#### Case

In 2009, a 11Y9M (0 year) girl with bilateral cleft and palate came to our hospital, she got a cleft mid-face hypoplasia profile, so her mother asked us could we do something to help her? After discussing with plastic surgeon, we made a treatment plan: Using Rigid External Distraction to make her maxilla advance first. After onemonth distraction and three months' consolidation, we made her maxilla advancing 14 mm.

After that, we started a 2-year obverse period to follow the maxilla relapse and mandible growth. At age 14(2 years), the maxilla/ mandible relationship was fair, she was received full mouth orthodontic treatment to make the dentition align well and get an ideal occlusion. At age 16(4 years), the orthodontic treatment was completed, she got an ideal occlusion and beautiful smile. At age 17(5 years), she was received lip and nose repair surgery to get a better profile. So far all the treatments were completed, and she felt that her life was changed since that. Then, we started to follow-up the retention of dentition every three months. At age 19(7 years), she still backed to our hospital routinely, let us make sure everything is well and stable. Now she is a young lady, she is starting her dream life.

#### Summary

If we didn't do anything in 2009, we just obverse the growth: we could imagine that at her age 18, she would get orthognathic surgery to correct the maxilla/mandible discrepancy. And also she would suffer the pain from bad facial profile and unideal occlusion. This treatment will help patient not only improve profile but also selfconfidence.

## No. 16 Relationship between Frontal Gap and Postoperative Stability in the Treatment of Mandibular Prognathism

#### Yu-Chuan Tseng 曽于娟<sup>1,2</sup> Kun-Jung Hsu 許坤榮<sup>1,3</sup> Ker-Kong Chen 陳克恭<sup>1</sup> Ju-Hui Wu 吳如惠<sup>3,4</sup> Chun-Ming Chen 陳俊明<sup>1,5</sup>

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#### Objective

To investigate the correlation



between frontal gaps and skeletal stability after intraoral vertical ramus osteotomy (IVRO) for correction of mandibular prognathism.

#### **Materials and Methods**

Thirty-three patients with frontal gaps after IVRO based mandibular prognathism correction were included. Three lateral and frontal cephalometric radiographs were obtained: preoperatively (T1), immediately postoperatively (T2), and 2 years postoperatively (T3). Two linear measurements (menton [Me] and frontal gap) were compared from T1 to T3 (T21: immediate surgical changes; T32: postoperative stability; T31: 2-year surgical change). Data were analyzed using Pearson's correlation coefficient and multiple linear regression.

#### Results

The T21mean surgical horizontal change in the Me position was 12.4 ± 4.23 mm. Vertically, the mean downward Me movement was 0.6 ± 1.73 mm. The mean frontal gaps were 4.7±2.68mm and 4±2.48mm in the right and left gonial regions, respectively. Postoperative stability (T32) significantly correlated with the amount of setback. Frontal gaps did not have a significant effect on postoperative stability. However, multiple regression model ( $R^2$  = 0.341, p = 0.017) showed value predictability, especially in the amount of setback.

#### Conclusion

Frontal gaps occur after IVRO but have no significant effect on longterm postoperative skeletal stability. The primary risk factor

for postoperative relapse remains

the amount of mandibular setback.

#### No. 17

## The Effect of Anterior Teeth Retraction on Upper Lip Length Change in Taiwanese Patients with Protrusive Upper Dentition

#### Szu-Ching Lee<sup>1,2</sup> Shih-Chin Chen<sup>1</sup> Fang-Chin Chen<sup>1,3</sup> Tzu-Ying Wu<sup>1,2</sup>

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Lateral profile was frequently used as the evaluated view for orthodontist when treating protrusive patients. However, what mattered most for patient are the changes in frontal view. Not only a well aligned dentition was expected, but also a balanced smile and lip form. This study was aimed to discover the influencing factors on upper lip length changes after anterior teeth retraction.

#### Material and methods

Pre- and post- treatment lateral cephalograms of 84 non-growing patients (12 males and 72 females, average  $23.5 \pm 5.6$  and  $23.3 \pm 6.1$  years-old respectively), with a Class

II division 1 or Class I bimaxillary protrusion, who had two or four first premolar extracted were enrolled. All the lateral cephalograms were taken under voluntarily rest position. Six linear and two angular measurements performed by one examiner for hard and soft tissue measurements. Paired t- test was used for intra-examiner reliability evaluation. Stepwise multiple regression analysis was used to evaluate the contributing factors on lip length change. Our results revealed that the change of upper lip length was influenced by multiple factors. Through the findings from our study, orthodontists may find it helpful in predicting soft tissue change and further beneficial in treatment planning.

#### No. 18

## A Case Report: Treatment of Class I Malocclusion with Temporary Anchorage Device

#### **Li-Ping Wang**

Division of orthodontic, Wan Fang hospital

This 16y4m girl with straight profile, everted lip and peri-oral protrusion complained of tooth malposition.

This is a case of class I skeletal and class I dental relationship with 12 37 cross-bite. The treatment plan was 14 24 34 44 extraction for establishing good alignment and stable occlusion. After the crossbite correction, the mandibular backward movement was found with

worse profile from more retrusive chin. The application of both sides IZC (infrazygomatic crest) TADs (temporary anchorage intrusion) did a lot in vertical control and made lower molar intrusion, and then mandibular counter-clockwise response occurred.

Upper anterior gingivectomy was done for better gingival and teeth display. Clear retainer was delivered for retention phase.

#### No. 19

Orthodontic Treatment of Skeletal Class III Malocclusion with Bimaxillary Protrusion and Low Mandibular Plane Angle

#### Wei-Chih Huang Benjamin HS Lo Chung-Hsing Li Gunng-Shinng Chen

Division of Orthodontic Dentistry, Department of Dentistry, Tri-Service General Hospital, Taipei, Taiwan

A 19-year-old man diagnosed with skeletal Class III malocclusion, low mandibular plane angle, bilateral molar class I relationship, upper and lower incisors protrusive, both lips protrusive. The treatment plan was extraction of 14,24,34 and 44 for profile improvement. In this poster, we used 4 mini-screws as maximum anchorage for space closure. The treatment result was satisfactory. Furthermore, the problems of closing space for low mandibular angle will be elaborated and discussed.

#### No. 20

## Diagnosis and Treatment of Cases with Gummy Smile

## Shao-Chun Yang Ming-Chu Huang Yu-Ling Cheng

Teamwork orthodontic center

#### Objective

Orthodontists today have to meet their patients' demand for esthetic satisfaction.This article presentsthree cases from the Su's clinic.The causes, diagnosis and treatment planning of gummy smile were compared and discussed.

#### Cases

Gummy smile is caused by excessive gingival display. It may result from extra-oral causes, such as short upper lip, hypermobile upper lip, anterior dentoalveolar extrusion, and vertical maxillary excess.Intra-orally, gingival enlargement and altered passive eruption can also be the causes of gummy smile.Optimal treatment plan includes orthodontic or orthodontic combined with surgical procedure. The therapy also needs either non extraction or bicuspid extraction. The possible treatment modalities arethe use of miniscrews, intrusive wires, smile training, gingivectomy, or even Botox injection.

In case 1, the supra-eruption upper anterior incisors were intruded by miniscrews. Extraction of four bicuspids and TADs insertion were chosen in case 2,gingivectomy was also preformed in order to give a better smile. The gummy smile of case 3 was due to severe maxillary excess on vertical dimension, orthognathic surgery for maxillary anterior impaction was therefore performed.

#### **Discussion and summary**

The gingival display significantly alters the esthetic perception of the smiles. The importance of facial and smile appearance has been increasingly recognized by patients. The identification of the etiology and proper diagnosis are essential to provide the best possible treatment.

#### No. 21

Surgical Exposure and Protraction of an Impaction Third Molar to Substitute Second Molar - A Case Report

#### Lan-Tien Lin Yuen-Yung Tsang Shi-Wei Pan Yi-Min Liu

Teamwork Orthodontic Center, Taipei, Taiwan

#### Objective

Interdisciplinary dentistry is an inevitable trend nowadays. More and more adult patients came in with periodontal problems or prosthesis needs, such as space regaining, re-distribution and etc. This presentation is to show a case for pre-prosthesis orthodontic



#### treatment.

#### Case

The 31Y11M female presented herself with complaint of anterior deepbite. All her first molars and lower left second molar were missing. The three remained second molars were mesial tipped and the upper molars elongated. Fortunately, her lower left third molar was still present, but impacted with a supernumerary tooth over it. After referring her to extract the supernumerary tooth and surgically exposed the impacted third molar, we protracted and uprighted her third molar to substitute the missing second molar. This ensured her to fabricate a 35X38 bridge or an implant to re-establish the lower left side occlusion. What's more, we leveled the elongated molars and reestablished her vertical dimension.

#### **Discussion and summary**

Protraction of lower molars is very challenging, especially when only single quadrant requires protraction, which may cause midline deviation. However, with the help of TADs, we had upright and protract the third molar successfully. Also, by using TADs, we had retracted the maxillary arch and opened up her bite to a normal overbite and overjet. After the orthodontic treatment, she had regained enough vertical dimension for her lower left molar prosthesis. Because the impacted third molar had been protracted to substitute the second molar, so the prosthesis had reduced from two implants to only one implant, or a three-unit bridge instead of four-unit bridge.

#### No. 22

## A Conservative Approach for Anterior Openbite Correction with Long Term Follow Up– A Case Report

#### Chao-Yu Chen<sup>1</sup> Yunn-Jy Chen<sup>2</sup> Chih-liang Julian Ho<sup>1</sup> Chung-Chen Jane Yao<sup>1</sup>

Divisions of Orthodontic and Dentofacial Orthopedics<sup>1</sup>, and prosthodontics<sup>2</sup>, Department of Dentistry, National Taiwan University Hospital; Graduate Institute of Clinical Dentistry, NTU

#### Objective

The treatment goal were resolving anterior openbite and restoring occlusal function using temporary anchorage devices for intrusion of posterior teeth. Long term stability was confirmed 8 years posttreatment.

#### Case

A 43 year- old male reported here had suffered from bite opening in recent few years after extraction of upper second molar. Patient presented a Class II, normal divergent skeletal pattern, along with dental class II malocclusion and -5 mm overbite resulted from premature contacts on terminal molars. An occlusal splint was delivered prior to orthodontic treatment for stabilizing TMJs. We then extracted upper Rt mesially tipped 3rd molar with poor prognosis, and other 3rd molars. Intentional posterior intrusion with bilateral miniplates was performed for total arch distalization to close the bite and reduce the overjet. Anterior openbite was corrected and proper occlusal function was restored. Furthermore, the solid occlusion remained stable after eight- year follow up, with only minor relapse in anterior alignment.

#### **Discussion and Summary**

The complex etiology of anterior openbite makes it one of the most difficult malocclusion to treat. After orthodontic treatment, ideal occlusion is often achieved. However, long term stability remains uncertain. Strategies for anterior openbite correction, such as MEAW technique, posterior intrusion with extra- oral anchorage or bony anchorage, or more aggressively, orthognathic surgeries should be studied for their effectiveness and long term stability. Here, we demonstrate an adult with severe anterior openbite being corrected using TADs. Moreover, an eightyear follow up record is also presented, confirming the long term stability of the treatment result.

#### No. 23

## Orthodontic Management of a Patient Diagnosed with Cleidocranial Dysplasia

Kai-Jing Yeh Ling-Yu Chang Fong-Lan Chan Yi-Jane Chen



#### 中華民國齒顎矯正學會 第十五屆第一次會員大會暨學術演講 Taiwan Association of Orthodontists

The 29<sup>th</sup> TAO Annual Meeting

Division of Orthodontics and Dentofacial Orthopedics,

Department of Dentistry, National Taiwan University Hospital, Taipei, Taiwan

School of Dentistry, National Taiwan University, Taipei, Taiwan

#### Objective

This case report describes the orthodontic treatment and long-term follow-up of a patient diagnosed with cleidocranial dysplasia (CCD).

#### Case

A 32-year-old male presented with spacing dentition and anterior crossbite. He was diagnosed with CCD. Clinical examination showed a concave facial profile and a retrusive midface with low mandibular plane angle. Cephalometric analysis showed Class III skeletal pattern with retrusive maxilla and prognathic mandible. Dental relationship was Angle Class III with anterior crossbite. The panoramic radiograph showed 1 retained primary tooth, 1 supernumerary tooth, and 4 permanent teeth (tooth 34 35 36 46) were missing. The patient refused orthognathic surgery and asked for the improvement of occlusal function. Surgical exposure of the impacted teeth and orthodontic traction was done, followed by comprehensive orthodontic treatment. Protraction facemask and Class III elastics were used to correct anterior crossbite. The edentulous space corresponding to lower left first and second premolars was restored by implant placement and prosthodontic rehabilitation. The follow-up records showed stable results after a retention period of 12 months.

#### **Discussion and Summary**

The dental management of individuals with CCD is challenging and involves comprehensive orthodontic and surgical treatments. This case demonstrates the camouflage orthodontic treatment help restore a functional occlusion in the patient of CCD.

### No. 24

## Asymmetries in Class II Subdivision Malocclusions

#### Chung-Teng Chang Ming-Jeaun Su Yu-Ling Cheng

Teamwork Orthodontic Center

#### Objective

Patients with Class II subdivision malocclusions usually also seen with deviated dental midlines. The molar relationship is Class I on one side and the other side Class II. It is reasonable to suspect that these dental malocclusions might have skeletal asymmetry besides their dental characteristics. Frontal asymmetry analysis by Grummons, Ricketts and others was adapted to reveal the extent of skeletal asymmetry in randomly selected Class II subdivision cases from our clinic, because photographic evaluation of facial asymmetry could be only a guesswork.

#### Case

Class II subdivisions may result from distal positioning of mandibular first molar, mesial positioning of maxillary first molar, or both. Studies have shown that there was a tendency for mandibular asymmetry in Class II subdivision subjects compared with the control group. The skeletal asymmetry was small in scale when compared with the one with Class III malocclusion. Our small sized subjects show discernible but mild skeletal asymmetry noted in lower third of the face, mainly as a consequence of mandibular bone deviation. The maxilla seems not very much involved in skeletal asymmetry. The dental midline deviation and displacement of molars can be evaluated through occlusal surface of dental casts, the relationship between those dental feature and skeletal asymmetry were speculated in this report.

#### **Discussion and Summary**

Mandibular and cranial asymmetries have become significant in planning treatment especially in adult orthodontics due to patients' frontal perspective. Class II subdivision cases also process the possibility of mandibular deviation and the occlusal plane canting. It is important to reveal the underlying skeletal asymmetries before the treatment using the diagnostic aids such as posteroanterior cephalo-metrics, submento-vertex radiographs, or 3D images.

#### No. 25

Asymmetric Condyle Case with Anterior Open Bite Relapse after Orthodontic Treatment - A Case Report



#### Yun-Ting Huang<sup>1</sup> Chih-Chen Chou<sup>1</sup> Hoi-Sheng Lu<sup>1</sup> Chia-Tze Kao<sup>1,2</sup>

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One of the condyle head asymmetry is caused by idiopathic condyle resorption (ICR). The aim of this case study was to discussthe relationship between anterior open bite and asymmetric condyle heads. This is a 15y10m female who come for orthodontic treatment due to anterior open bite. During orthodontic initial examination, the patient was an Angle class II malocclusion with retrognathic mandible.The condylar heads werefound asymmetric morphology. The past history of the patient was no habit problem or traumatic history on face. The treatment plan were to do orthodontic combined with orthognathic surgery. The teeth were aligned. Before OGS, patient changed her mind not accept surgery. Thus the treatment were finished with orthodontic treatment only at patient's age 18.8 years. After one year follow up, the anterior open bite were found again. Patient were went to x ray recheck, the TMJ function were check with minor TMD syndrome. It is proposed that the TMJ might be the cause of the anterior open bite relapse. In many patients, the trauma on the jaw were ignored when they were kid. It might cause the condyle ICR happened. It is supposed that parents need to watch out the facial trauma and

dentist should have a record on it. It can give the orthodontist a better reference on the diagnosis and treatment plan in such a case.

## No. 26 Torquing Auxiliaries in Orthodontics

#### Yi-Wei Huang Chun-Liang Kuo Yi-Hua Liu Hsueh-Jui Chen

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Center for General Education, Southern Taiwan University of Science and Technology

It is important to maintain appropriate labio-lingual inclination of anterior and posterior teeth to achieve successful orthodontic treatment. Proper buccolingual inclination is essential to provide better esthetic, stability and functional occlusal relationship. With Edgewise appliance, torque or buccolingual inclination was achieved by third order bends placed in arch wire. With Begg appliance, inclination was achieved with auxiliaries. Although majority of orthodontic brackets are pretorqued to give third order control by the arch wire, still plenty of factors will affect the torque expression. As an orthodontist, we should have an understanding the timing and methods of torque control during the treatment depending on the system used, making the treatment much simpler and more desirable. Auxiliaries of torquing spring and

anterior root torquing spring (ART) are devices designed to allow orthodontists to torque roots at the end of treatment and can avoid relapse in the overbite and overjet relationship.

Cases in the end would show how and when the torquing auxiliaries help to achieve the satisfactory torque expression. Ability to identify and correct the small details is the keys to excellence on orthodontics.

#### No. 27

## Functional Appliance Treatment for Class II Division 1 Malocclusion in Growing Patient

#### Yu-Cheng Hsu<sup>1</sup> Chia-Tze Kao<sup>1,2</sup> Tzu-Hsin Lee<sup>1,2</sup> Po-Yu Yang<sup>1,2</sup>

<sup>1</sup>Orthodontic Department, Chung Shan Medical University Hospital <sup>2</sup>School of Dentistry, College of Oral Medicine, Chung Shan Medical University

#### Objective

The aim of this study was to utilizing twin-block appliance to achieve mandibular advancement during growth.

#### Case

The subject was a 13y10m male of class II division 1 malocclusion with prognathic maxilla and retrognathic mandible. Considering the growth potential of the patient, the treatment plan was high-pull

headgear for inhibiting maxillary growth and twin block appliance treatment for condylar growth and glenoid fossa remodeling with upper incisors retraction, then fixed appliance will be used for leveling and alignment after stablized class I occlusion.

#### **Discussion and Summary**

Differential diagnosis of class II malocclusion is crucial for treatment planning. In this case, the CVM staging was around stage III to IV, the growing potential was noted, functional appliance was indicated for mandibular advancement. Cephalometric analysis illustrated the change of mandibular growth with retroclination of upper incisors and proclination of lower incisors, which coincided with the proposition of the function of twin block appliance.

#### No. 28

## The Management of Mandible 1<sup>st</sup> and 2<sup>nd</sup> Molars Eruption Failure

#### Mei-Yin Chen<sup>1</sup> Heng-Ming Chang<sup>1</sup> Wen-Ken Tai<sup>1</sup> Chia-Tze Kao<sup>1,2</sup>

<sup>1</sup>Orthodontic Department, Chung Shan Medical University Hospital <sup>2</sup>School of Dentistry, College of Oral Medicine, Chung Shan Medical University

#### Objective

The aim of this study was to consider the factors that influence tooth eruption failure, and to report how to treat the failure of lower molars eruption.

#### Case

This is a 14y3m male child with left mandibular 1st and 2nd molars eruption failure. He was referred to our hospital for orthodontic treatment. His lower left first molar was partial erupted and infraocclusion, and second molar were severe impacted. Due to his young age, severe overjet, convex profile and Angle's Class II malocclusion on the right side, we decided to have 2 stage treatment plan, stage I of twin block, and stage II of 4 bicuspids and 37 extraction, and surgical exposure of 36. The final result was acceptable with harmonious profile, reduced overjet, and stable occlusion.

#### **Discussion and Summary**

Failure of molar eruption may caused by many factors. To discriminate the eruption failure and ankylosis of the tooth is important to the orthodontic treatment. In present case, due to the tooth 37 failure of eruption and with buccal-version, it is extremely difficult to extrude 37 by orthodontic force. The extraction is indicated. Also, treatment plan should be considered that to upright severe malposition tooth's periodontal status. It is concluded that to treat the failure eruption impaction tooth should be diagnosis carefully and make a precisely treatment plan.

## No. 29 Using Trans-Cutaneous Rigid

## External Distraction Device to Treat Severe Maxillary Hypoplasia Adult Patient- A Case Report

#### Li-Tyng Sun¹ Yu-Jen Chang¹ Jui-Pin Lai²

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[1] It is always challenging for surgeons and orthodontists to treat patients with severe maxillary hypoplasia. Using Le Fort I osteotomy to advance the maxilla may create some disadvantages. including questionable stability, infection of bone grafting and soft tissue boundary in the great amount of correction. Distraction osteogenesis (DO) can be used as an alternative for maxillary advancement. To control the vector of advancement easily and reduce dental side-effect, the transcutaneous rigid external distraction devices (RED) would be better. [2] A 17Y5M male with cleidocranial dysostosis is regularly followed-up in our craniofacial center. The clinical findings were Class III malocclusion with severe midface retrusion and multiple supernumerary teeth. The patient was arranged



to extract supernumerary teeth. And original treatment plan was orthodontic treatment combined with orthognathic surgery for maxillary advancement. However, routinely checking the CT before surgery, we found the bone quality was too poor to fix with rigid fixation plates by surgeon. We used DO with transcutaneous RED to trace the maxilla to correct severe bony discrepancy. A complete high Le Fort I osteotomy was performed, the fixation plates were placed on the lower part of pyriform aperture. After 12 days, distraction started by turning the two distracted rods at a rate of 1 mm/a day. The total amount of maxillary advancement was 15 mm after 6-weeks activating. Then 3 months of maintenance, all the devices were removed. Now, both the overjet and overbite are 1 mm. The patient is under post-distraction orthodontic treatment now. [3] Maxillary DO with RED can correct severe midface retrusion cases, including both skeletal and soft-tissue deficiency. Besides, we placed the fixation plate directly to the maxilla, so we can reduce the dental effect during protraction. In this case, the treatment outcome is good with DO. The patient is also satisfied with the profile change.

#### No. 30

Orthodontic Forced Eruption of Impacted Mandibular Canine and Lateral Incisor —A Case Report

#### Szu-Ting Chou 周思婷

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#### Objective

Impaction of mandibular canine is uncommon. However, eruption disturbance of mandibular canine combined with impaction of adjacent lateral incisor is even more rare. When two anterior teeth were closely impacted, orthodontic forced eruption of these teeth is more difficult and careful consideration is needed.

#### Case

This case report illustrated a 15 years-old female patient who had impacted mandibular right canine (#43) and lateral incisor(#42). Dental examination showed Class I molar relation, mild anterior crowding, and elongation of upper right lateral incisor due to impaction of lower right lateral incisor and canine. Cephalometric analysis showed skeletal Class I jaw relation and protrusive upper and lower incisors. 3D-CBCT exam showed that #43 was mesial-angular impacted at lingual surface of lower central incisors and #42 was more deeply impacted under #43 and the position of #42 crown crossed mandibular midpoint and was at level of apical third of lower left lateral incisor.

Sequential forced eruption of impacted #43, #42 with cantilever spring and bone screw anchorage was planned. During treatment, the patient underwent two times of surgical-exposure surgery and eventually #43, #42 were successfully moved into arch and normal occlusal contacts were regained.

Total treatment time was about 3 years. Well aligned dentition, Class I molar and canine relation and balanced facial profile were achieved.

#### **Discussion and Summary**

With the aid of bone screw anchorage, side effects of traditional tooth-borne anchorage could be reduced during forced eruption of deeply impacted teeth. Comprehensive and careful consideration in treatment planning is extremely important.

#### No. 31

Orthodontic Outcome Assessment by ABO Model Grading System in an Adult Female Patient with Anterior Open Bite and Ankylosed Tooth

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#### Objective

Tooth ankylosis is defined as a fusion of cementum or dentin with alveolar bone and diagnosed by its metallic sound, limited of normal mobility and disappeared or discontinued PDL space from radiograph. Clinically, the orthodontic tooth movement is not feasible in those ankylosed teeth. Meanwhile, the ankylosed tooth often causes undesirable movement of anchorage teeth. The deciduous teeth become ankylosed far more frequently than do permanent teeth. However, the possibility of permanent teeth being ankylosed cannot be ignored either although their prevalence ratio is only 1 to 10. Therefore, the orthodontic management for those malocclusions with ankylosis teeth is a clinical challenge. Several treatment to manage ankylosed teeth have been proposed including surgical luxation, orthodontic distraction, restoration or extraction followed by implant replacement. The aims of this case report is management of adult female patient with on- going orthodontic treatment who was referred from another orthodontist.

#### Case

A 34-year-old female patient with Class I malocclusion, anterior open bite and missing lower left first molar was referred from another orthodnitist. She also presented with an ankylosed upper premolar. Therefore, the re-diagnosed treatment plan was to intrude the buccal segments of upper arch and correction of proclination of upper incisors. The total treatment lasted for 2 years and 6 months. The treatment outcome and the improvement were assessed by ABO model grading system.

#### **Discussion and Summary**

The intrusion of the upper molars and improvement of upper incisors for this patient were the main keys to successful treatment. The assessment of treatment outcome and the improvement by ABO model grading system was performed. And the discussion to treatment of ankylosed tooth will be presented.

#### No. 32

## Soft Tissue Profile Change Assessment is Important in Planning the Treatment

以測顱分析軟組織變 化來制定治療計畫 Yi-Bo Huang 黃奕帛 Chia-Yi Pan 潘佳儀 Shih-Wei Pan 潘世偉 Teamwork Orthodontic Center.

Taipei, Taiwan 明圳齒顎矯正專科診所

臉部的美觀評估是矯正治療開始 時最直觀卻不可忽視的。對許多患者 來講,外貌的改變常是尋求治療的主 要動機之一。

雖有性別、年齡之差異,患者 之硬組織(骨骼及齒列)也能影響 外觀。本次報告藉由軟組織分析來 評估患者治療前的軟組織特徵,包 括facial convexity、lip protrusion、 upper incisor exposure、lip thickness、naso-labial angle以幫助 確立治療方法及治療目標。本報告將 以五個案例討論患者治療前外觀的特 點,擬定治療計畫並評估軟組織在矯 正治療後的變化。

第一病例為正在生長發育高峰 期的青少年男性,軟組織評估發現其 angle of facial convexity (G'-Sn-Pg') 較小,預測患者可因下顎生長改善軟 組織側貌。第二病例為前牙錯咬,鼻 唇角接近正常,治療時可使下顎前齒 後移以改善外貌。第三病例有外型突 出側貌,且有上下唇閉合不全。第四 病例嘴唇較厚,治療前後外觀變化不 大。第五病例治療前有深咬及水平覆 咬過大,暴牙明顯。

測顧分析中,除了骨性關係、齒 列關係的測量,軟組織分析的數值也 很重要。客製化治療計畫的擬定,需 與患者長期溝通,明白患者需求與想 法,患者也不應對外貌的改變過度期 待,應充分瞭解治療的極限。軟組織 的治療前評估在診斷時可做為拔牙或 不拔牙之依據。前牙變化的正確預估 才能保證治療結果的穩定。

#### No. 33

Orthodontic Treatment of an Adolescent Patient with Temporomandibular Disorders and Anterior Open-Bite with Speech Disturbance: A Case Report

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#### Objective

Orthodontic treatment for patients with open-bite has been a challenge for its complicated etiologic factors and high relapse rate. The treatment can be even more difficult for those patients concomitantly present with temporomandibular disorders (TMD) and tongue posturing habit during speeches.

#### Case

This case report describes a 15-year-old female patient with Class I malocclusion with anterior open-bite and high mandibular plane angle. She had been suffering from TMJ capsulitis, masticatory myalgia and temporal tendonitis before she attended the orthodontic clinic. Her tongue posturing habit, which was considered to be one of the etiology of her anterior open-bite, resulted in her constant problem in articulation. TMD management with medications, cognitive behavior therapy and splint treatment were carried out before active orthodontic treatment. Meanwhile, patient was arranged for speech evaluation and treatment. The orthodontic treatment was commenced at the age of 16 after the conditions of TMD and speech therapy improved. The orthodontic treatment lasted for 3 years. The outcome was present with reasonably good result and PAR index was applied for assess the degree of orthodontic improvement.

#### **Discussion and Summary**

Due to the complicated multifactorial etiologic factors and high relapse rate for openbite patients, evaluations of the etiologic factors and treatments for indicated etiologic factors are very crucial. Despite the fact that malocclusion was not necessarily the major etiologic factor for her TMD symptoms and signs, TMD management prior to orthodontic treatment had to be taken into account. The results showed openbite correction from -3.5mm to 2mm with reasonable cusp-to-fossa buccal interdigitation. PAR index reveals significant improvement.

#### No. 34

## The Correction of Severe Crowding with Ectopic Erupted Blocked-Out Canine by Rapid Palatal Expansion (RPE) Appliances in Adult Female Patient

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This repost describes a case report – an 18-year-old female with severe crowding included a blocked-out canine and anterior crossbite was treated with a RPE (Rapid Palatal Expansion) appliances followed by a non-extraction cutting edge appliance treatment. The pretreatment and post-treatment lateral cephalograms were traced, as well as the intra-oral photographs. The result demonstrates that the expansion reduced the crowding and successfully corrected the anterior crossbite.

#### No. 35

## Treatment of Skeletal Class II Malocclusion with Temporary Anchorage Devices - A Case Report

#### Fu-Hui Tsai Jui-Hsien Yang Yun-Yun Wu

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#### Objective

Facial esthetics accompany with acceptable occlusion are often the mainly demands from those orthodontic patient. Skeletal Class II div.1 malocclusion with large overjet and mandibular deficiency was a difficult test for orthodontic treatment to achieve pleasing outcomes. In this case presented, we used



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temporary anchorage devices (TADs) combined with extraction four premolars to achieve satisfied profile and occlusion.

#### Case

The case presented was a 18-year old female with the chief complaint of protruded profile. Clinical examination revealed that she had incompetent lips, and mandibular deficiency. Bilateral Class II molar relationships, large overjet, and proclined incisors were also noted. Cephalometrics indicated that she had skeletal Class II malocclusion, hyperdivergent facial pattern, upper and lower lips protruded to E line. Based on her chief complaint and profile, the treatment plans included extraction of four first premolars and installation of two temporary anchorage devices (TADs) over maxillary arch. Full mouth fixed appliance was performed. After initial rounding and leveling period, maxillary arch was changed to rectangular rigid stainless steel wire and two TADs were put as maximum anchorage for en masse retraction. Anterior torque and overbite control were done by using intrusive arch during retraction period. Upper arch leveling with sequential wire size changes: .016 NiTi, .016x.022 NiTi, and .018x.025 stainless steel wire during retraction.

Maxillary and mandibular arches were aligned well in 26 months . Facial profile improved, and Class I molar and canine relationships were achieved. Cephalometric superimposition revealed that incisor axes had controlled tipping during retraction movement.

#### **Discussion and Summary**

Anchorage control and anterior torque control are important factors for success treatment in adult Class II malocclusion. We present the outcome of this case to contribute in part to improve the awareness.

## No. 36 Facial Asymmetry Correct with TADS

#### Chien-Wei Chao<sup>1,2</sup> Chih-Chen Chou<sup>1</sup> Wen-Ken Tai<sup>1</sup> Chia-Tze Kao<sup>1,2</sup>

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#### Objective

The aim of the case present was to show using the TAD to improve the midline deviation. The biomechanics of this treatment is discussed.

#### Case

This is an 27y6m female with facial asymmetry. Patient complaints and desires to be addressed since she may vary from unrealistic exceptions to a lack of concern even in the presence of large deviations. Angle class I with mild dental , skeletal and soft tissue deviation. The advisability of treatment should be carefully considered. We used TAD to intrude her dumping upper right dentition and correct the midline. The profile of asymmetry has improved.

#### **Discussion and Summary**

The etiology of asymmetry

includes: 1.Genetic or congenital malformations e.g. hemifacial microsomia and unilateral clefts of the lip and palate; 2.Environmental factors, e.g. habits and trauma; 3. Functional deviations, e.g. mandibular shifts as a result of tooth interferences.Dental asymmetries and a variety of functional deviation can be treated orthodontically. On the other hands, significant structural facial asymmetries are not easily amenable to orthodontic treatment. These problems may require orthopedic correction during the growth period and/or surgical management at a later point.

#### Conclusion

Although TAD has tooth movement limit, but TAD is helpful to control the tooth movement in any direction and shorten the treatment time.

#### No. 37

## Unilateral Maxillary Second Molar Protraction with Brake System- Case Report

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#### Jui-Chen Hsueh<sup>1</sup>

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To protract symmetric bilateral maxillary molars, it's sufficient to close extraction space without



affecting incisor position by anterior dental anchorage or Class III directional elastics. However, in more challenging cases such as asymmetric extraction situation, orthodontic brake mechanism may facilitate efficient maxillary molar protraction without dental midline shift.

This case report describes the treatment of a 16-year-old female who had missing of tooth 26 with molar Class I malocclusion in the right side. Based on the orthodontic analysis and treatment plan, tooth 27 was designed to be protracted to substitute for the extracted tooth 26. With the aid of orthodontic brake mechanism during the treatment procedure, the final treatment result shows good midline coincidence and extraction space of maxillary first molar was completely closed .

To successfully meet expectations on protracting unilateral maxillary molars without shifting dental midline in the case of asymmetric extraction space closure, orthodontists need to take the orthodontic brake mechanism into consideration to make orthodontic treatment plan become more simple and much easier.

#### No. 38

## TADs與前牙開咬治療 <sup>洪嫺芳、劉怡敏、曾婉容</sup>

明圳齒顎矯正專科診所

前牙開咬是一種垂直面相的咬合 不正。開咬的成因很複雜。成人的前 牙開咬治療方式可分為合併正顎手術 與單純傳統矯正治療。骨性開咬太嚴 重的病人,建議手術合併矯正治療來 讓上下顎復位到適合的位置。 傳統治療前牙開咬以拔牙方法治 療,利用wedge effect將後牙向前關 閉拔牙空間,前牙則因向後移動,會 使上下牙切端靠近,可減少開咬以達 到治療目標。另一方面,近十年來使 用骨釘做加強錨定(TADs),上顎 後牙壓入才變為可行。下顎臼齒只能 嚴守垂直高度,不使其萌出。因此下 顎會產生autorotation,以改善前牙 開咬。必要時還可藉由咬合調整來紓 解治療完後的relapse。治療中盡量 避免施力過大以免造成牙根吸收。

TADs最適合用於後方牙齒在垂 直方向有過度生長的病例。診斷上應 先確認上顎大臼齒有無過度萌發;檢 查上顎第一大臼齒到palatal plane的 距離勿大於23±1.7mm。此類患者 下顎一般呈現高開展生長方式,下顎 角常大於35度,本文之病例,皆屬 此類。也藉由這些個案來探討TADs 治療開咬的效果。

TADs可以提供良好的錨定。壓 入大臼齒成為治療前牙開咬的關鍵步 驟,後續治療可變為簡單。雖不可避 免臼齒之復發萌出,但要控制好上下 顎垂直距離以降低風險。TADs的幫 忙能夠使治療前牙開咬更有效率,不 再是矯正治療中難度最高的病例。

#### No. 39

## Adult Interdisciplinary Treatment for Deep Bite Correction – A Case Report

#### Tzu-Ling Chuang Kuang-Hsuan Chang Wei-Ting Tseng Yi-Jane Chen

Divisions of Orthodontic and Dentofacial Orthopedics, Department of Dentistry, National Taiwan University Hospital

#### Objective

This case report is to demonstrate the team approach for an adult patient requiring prosthodontics reconstruction.

#### Case

This 56-year-old male was referred for orthodontic evaluation before new prosthesis fabrication for tooth 11. He presented with Angle Class I malocclusion and deep overbite. Mal-alignment of upper and lower arches was noted, the space deficiency was 7 and 4 mm respectively. Orthodontic treatment was suggested to relieve dental crowding, level the exaggerate curve of Spee, and consolidate the missing spaces for prosthesis reconstruction.

Bilateral mini-screws were implanted on buccal infrazygomatic crest area to relieve crowding by distalization of upper dentition. Lower intrusive arch and posterior bite turbo were applied to level the curve of Spee. Lower molar extrusion was noted, possibly due to the use of Class II elastic. Normal overjet, overbite, and stable occlusion were established. After final prosthesis fabrication, the patient had a good functional occlusion and a more pleasant smile.

#### **Discussion and Summary**

Incisors intrusion and molars extrusion are often used for deep bite correction. In adult case, managing periodontal health during deep bite correction is important. Orthodontic treatment improves the alignment of dentition, space distribution and overbite/ overjet relationship, thus facilitates prosthodontics work.

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#### No. 40

## Orthodontic Treatment of Maxillary Impacted Central Incisor: A Case Report

#### Shih-Chieh Chen 陳世杰<sup>·</sup> Hsin-Ju Chen 陳歆如 Szu-Ting Chou 周思婷

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#### Object

Although the prevalence of impacted maxillary central incisors is low (0.06%–0.20%), which not only results in esthetic problem but also is a concern for social wellbeing and lacking of confidence. Thus, most patients ask for dental treatment during teenage. Among many alternative treatments, surgical exposure with orthodontic treatment is popular with patients who prefer nature tooth instead of prosthesis even though the orthodontic treatment is relatively time-consuming.

#### Case

This case is a 10 year-old girl with labial inversely impacted #21 confirmed by CBCT. Clinical examination showed bilateral Class I molar relation, #11 erupted. Bilateral upper deciduous canine, 1st and 2nd molar retained. From cephalometric analysis, skeletal Class II and hyperdivergent facial pattern with protrusive lip and convex profile was noted. Owing to that it was still a period of time for permanent canine, 1st and 2nd premolar erupted automatically, 2-staged orthodontic treatment was planned. Surgical exposure was done and miniscrew was placed at 22"23 interdental 4 months following DBS.

After 13 months of orthodontic treatment, forced eruption of impacted maxillary central incisor was accomplished. Acceptable overjet and overbite was achieved. Bilateral molar relation remained Angle's Class I. However, protrusive lips and convex profile are the issue of 2nd stage of orthodontic treatment.

#### Discussion

In the past, radiographic measurements have been based on 2D images, but it has limits in detail. CBCT has been widely introduced in dentistry since it offers 3D reconstruction and the capacity to assess root length and root morphology. Therefore, it's a trend to treat impacted teeth with analysis of CBCT.

Orthodontic anchorage is a noteworthy question during treatment for impacted teeth. Because it moves a long distance with a large angle of rotation throughout treatment, maximum anchorage is needed. TPA or Nance appliance is common in traditional treatment, yet those could produce some undesirable effects such as intrusion or tipping. Using miniscrew as anchorage may avoid above side effects.

#### No. 41

## Angle's Class II with Non-Extraction Treatment – A Case Report

#### Hao-Wen Chang Ming-Chu Huan

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#### Objective

To demonstrate the soft tissue change of an Angle's Class II patient with large overjet and deepbite using non-extraction treatment method. By distalizing the upper molars and expansion of the upper and lower dental arches, the patient obtained normal overjet and overbitewithClass I molar relationships.

#### Case

A 26-year-old female with full Class II molar relationships and 6.5 mm overjet sought nonextraction treatment in the clinic. The upper and lower arch perimeter discrepancies were -3.5 mm and -2 mm, respectively. After extraction of all third molars, the upper molars were distalized about 2.5 mm both sides by mini-screws and the intermolar width was expanded 3.5 mm in the upper, 2 mm in the lower through arch wire expansion. Upper incisors were retracted 5.5 mm whereas the upper lip moved 2.5 mm retrusive to the E-line followed by. The total treatment time is three years and two months. Bilateral Class I molar, plus optimal overjet



and overbite were then achieved.

#### **Discussion and Summary**

Ricketts et al. (1982) suggested an increase of 0.25 mm in the perimeter for every 1 mm added to the intermolar distance, concomitantly, a ratio of 1:1 regarding the intercanine distance, and a ratio of 2:1 regarding the incisor proclination were also found. With the help of temporary anchorage devices, it isattainable to distalize teeth if there is adequate spaceand bony housing behind the molars. Using arch expansion and/or distalization of the whole dentition, non-extraction treatment for protrusive or crowded teeth can be fulfilled.

#### No. 42

## Treatment of Class III Malocclusion and Dental Midline Discrepancy Using Non-Extraction Management and Miniscrew Anchorage

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#### Objective

Class III malocclusion and dental midline discrepancy are not easily treated using conventional orthodontic mechanics in nonsurgical and non-extraction cases. Through careful diagnosis and appropriate use of orthodontic mechanics and miniscrew anchorage, this can be treated successfully by non-surgical and non-extraction camouflage correction.

#### Case

This is a case report of a 20-yearold female with a chief complaint of crooked incisors and anterior crossbite. She had a skeletal class III malocclusion, facial asymmetry with the chin deviated to the left side, and a straight facial profile with a protrusive lower lip. Her dental problems were diagnosed as dental class III malocclusion, anterior crossbite with functional shift, upper dental midline shift to left side, and mild crowding. She had no dental compensation, and a skeletal discrepancy was not severe. Therefore, non-surgical and non-extraction orthodontic treatment combined with skeletal anchorage was adopted as the treatment modality. The treatment plan were extracted the maxillary and mandibular 3rd molars as the distalized spaces. The upper dental midline was corrected by upper right posterior teeth distalization and right shift of upper anterior teeth using miniscrews and sliding jigs. The anterior crossbite and dental class III malocclusion were also corrected by lower dentition distalization using bilateral miniscrews and sliding jigs. Treatment results showed that the anterior crossbite was corrected, the normal overbite and overiet were obtained, the dental midline was coincided, the dental

sagittal relationship and occlusion interdigitation were corrected, and lip posture and facial profile were improved.

#### **Discussion and Summary**

Class III malocclusion and dental midline discrepancy treated with a non-extraction approach can be corrected successfully corrected through total dentition distalization and shift by using miniscrews and sliding jigs, if the miniscrew anchorage and orthodontic mechanics are well designed.

## No. 43 Premolar Substitution

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#### Objective

Treatment considerations including canine guidance, Bolton's discrepancy, gingival height, crown width, and torque.

#### Case

This is an 12y3m female child with left maxillary canine impaction. She was referred to our hospital for orthodontic treatment. Her upper left canine was severe impacted. Due to her young age, straight profile and Angle's Class I malocclusion on the right side, we decided to extract tooth 23 and substitute with premolar. The final result



was acceptable with esthetic and harmonious anterior teeth alignment and stable occlusion.

#### **Discussion and Summary**

In canine-quided occlusion, during lateral excursion, all the teeth will have no contact except for the cuspids on the working side. However, palatal cusp of upper premolrs did not interfere with the establishment of group function occlusion.Another possible clinical concern related to maxillary premolar substitution is smile esthetics. The maxillary first premolar is a shorter crown than the maxillary canine, thus leading to difference in gingival or occlusal height level depending on the final vertical position of the premolars. Moreover, the first premolars had prominent buccal cusps and adequate mesiodistal widths.Consideration must also be given to treatment mechanics when substituting upper canines with first premolars. - 7° buccal root torque was incorporated in the first upper premolars to replicate canine prominence, raise the gingival level, and to support the upper lip.

#### No. 44

Using Temporary Anchorage Devices for Treatment of Skeletal Class II Malocclusion with Bimaxillary Dentoalveolar Protrusion

#### Chien Yang<sup>1,2</sup> Chih-Yi Tien<sup>2</sup> Yu-Chuan Tseng<sup>1,2</sup>

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#### Objective

Traditionally, when patients with severe skeletal Class II and bimaxillary dentoalveolar protrusion, orthodontic treatments combine with orthognathic surgery (OgS) will be suggested. However, higher risks come along with surgery. Nowadays, with the help of temporary anchorage devices (TADs), we can achieve absolute anchorage and whole arches distalization to improve patient's facial profiles.

#### Case

This case is a 25 y/o female patient. Her chief complaint was protrusive lower facial part, space between upper central incisors and excessive gum shown when emotional smile. From the cephalometric analysis, skeletal Class II (ANB:7.50, mandibular retrusion) was noted. Therefore, orthodontic treatments combine with OgS was suggested. Bimaxillary anterior subapical osteotomy combine genioplasty was the primary treatment option. However, she rejected and preferred to a more conservative treatment.

The alternative treatment plan was non –surgical treatment and extraction of four first premolars. With the help of four TADs as anchorage over bilateral infrazygomatic crest and buccal shelf, distalization of both arches was achieved. After treatment, the protrusive upper, lower lips and gummy smile were corrected.

#### **Discussion and Summary**

Treatment of severe skeletal Class II malocclusion with bimaxillary dentoalveolar protrusion often requires premolar extractions and absolute anchorage. Anchorage control for arch distalization is critical for successful treatment. Traditionally, to reinforce anchorage, various auxiliaries can be used, including headgear, lingual arch, transpalatal arch, and intermaxillary elastics. But it needs good patient's compliance. Even in some cases, OgS still holds the best way to improve treatment results.

Nowadays, TADs are available to provide steady and continuous force for tooth movements and even patients reject operation. Just like this case, the harmony of facial profile was achieved with the help of TADs

#### No. 45

## Uprighting Auxiliaries in Orthodontics

## Ting-Yu Kuo<sup>1</sup> Chun-Liang Kuo<sup>1,2</sup> Yi-Hua Liu<sup>1</sup>

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Uprighting teeth is not uncommon in orthodontic treatments, especially in



molar uprighting. Treatment options depend on the degree of tooth inclination, the position of adjacent teeth, and the desired type of tooth movement.

Although diagnosis and treatments in uprighting are discussed, the specific auxiliaries of Tip-Edge system - The side winder (uprighting spring) is now well developed in uprighting teeth. Moreover, using the side winder and accompanied with "Brake Mechanism" techniques, that can easily control the anchorage and upright as well as protract tiled molars.

The purpose of this poster is to introduce some uprighting auxiliaries and appliances with the following introductions of the etiology and treatment, type and biomechanism, and last but not the least, the methods of teeth uprighting. At last, I will share a case of molar uprighting and protraction by using the side winder.

#### No. 46

## The Use of Fixed Anterior Bite Plate in Class II Division 1 Malocclusion with Deeper Overbite Growing Patient

#### Jian-Hong Lin<sup>1</sup> Chun-Liang Kuo<sup>1,2</sup> I-Hua Liu<sup>1</sup> Jui-Chen Hsueh<sup>1</sup>

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Most of Class II malocclusions are due to underdeveloped mandible with increased overjet and overbite. Lack of incisal contact results in the extrusion of the upper and lower dentoalveolar complex, which helps to lock the mandible and prevent its normal growth and development, and its abnormality is exaggerated by soft tissue imbalance.

This report describes the treatment of a 10-year-ole boy who had skeletal class II with mandible deficiency and dental class II division 1 malocclusion with excessive OJ and deep bite. Fixed type anterior bite plate are used to guide mandible forward and intrude lower anterior teeth to correct overbite. Pre and post-treatment X-rays show that there no significant change in mandibular plane angle. The mandibular incisors are protruded, whereas the maxillary incisors are retruded. Overjet and overbite are also reduced. There was significant increase in the mandible length.

This case report shows that the anterior bite plate appliance has the ability to significantly increase mandible length in growing patient and thereby improve occlusion and facial aesthetics.

#### No. 47

Surgery-First Accelerated Orthognathic Surgery: Treatment of Severe Class III Malocclusion with

## Facial Asymmetry-A Case Report

#### Yi-Wen Chien 錢怡雲 Jeih-Fu Chen 陳玠甫 Szu-Ting Chou 周思婷

Department of Orthodontics, Kaohsiung Medical University Hospital, Taiwan

#### Objective

In dealing with severe Class III malocclusion, the conventional approach is an orthodonticsfirst approach. The surgery-first approach treats facial esthetics first and then occlusion, whereas the conventional approach treats occlusion first and then facial esthetics. The surgery-first approach uses osteotomy to solve both skeletal problems and dental discrepancy, and a "transitional" occlusion is set up postoperatively. Orthodontics in the surgery-first approach is a postoperatively adjunctive treatment to transfigure the transitional occlusion into the solid final occlusion.

#### Case

The patient was a 25 year old male with skeletal Class III jaw relation, mandibular prognathism, orthodivergent facial pattern, and facial asymmetry. In dental aspect, he had Class III malocclusion combined with crowding, anterior and posterior cross-bite. The surgical plan was mandibular setback by bilateral vertical ramus osteotomy. If p't felt upper lip protrusive after surgery, the possibility of extraction of bilateral upper and lower first premolars, or application of miniscrews over

maxillary bilateral infrazygomatic crest and buccal shelf maybe needed. After orthognathic surgery, facial asymmetry, mandiblar prognathism, anterior and posterior cross-bite had improved. The postsurgical orthodontic treatment focused on building solid final occlusion, including leveling and alignment, settling down of teeth by elastics. After about 1 year of treatment without any extractions, crowding was relieved and teeth were settled down as well. Patient was satisfied with the facial profile and dental occlusion.

#### **Discussion and summary**

Indications of surgery-first approach was: 1) moderate or minimal crowding and adequate inclination of mandibular anterior teeth, 2) at least 3 stable occlusal stops between the upper and lower arches, 3) little or no transverse discrepancy, and 4) flat to mildly curve of Spee. The advantages of the surgery-first approach are that 1) the patient's chief complaint, dental function, and facial esthetics are achieved and improved in the beginning of the treatment; 2) the entire treatment period is shortened to 1 to 1.5 years or fewer depending on the complexity of orthodontic treatment; and 3) the phenomenon of postoperatively accelerated orthodontic tooth movement reduces the difficulty and treatment time of orthodontic management in the surgery-first approach.

#### No. 48

# The Intervention of Root Coverage

## and Frenectomy for Gingiva Recession of Lower Incisor – A Case Report

#### Chang Wei-Yo<sup>1</sup> Wu Te-Ju<sup>1</sup> Chen Ren-Jye<sup>2</sup> Hsu Wei-Yung<sup>3</sup>

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#### Objective

Gingiva recession with root exposure during orthodontic treatment is a serious concern. Many factors may contribute to gingiva recession, such as destructive periodontal disease, severe crowding, malposition of the teeth, frenal attachment, and occlusal trauma. The principles of managing gingiva recession are to cover the exposed root surface in order to improve esthetics, reduce hypersensitivity, and reestablish the surrounding periodontal integrity. This case report presented an adolescent orthodontic patient with gingiva recession and was successfully treated by orthodontic treatment, frenectomy and free gingiva graft.

#### Case

This 18-year-old female patient possessed Class II division 1 malocclusion (subdivision on right side) with retrognathic mandible. The intra-oral findings revealed an increased overjet, Class II molar relationship over right side and Class III molar relationship over left side. Both arches possessed severe crowding. Treatment plan involved full-mouth fixed orthodontic appliance with 4 premolars extraction. And gingiva recession over the lower right central incisor occurred 12 months after the commencement of orthodontic treatment. She was referred for evaluation of frenectomy and free gingiva graft. The dentitions were successfully aligned with stable grafting result after 31-month orthodontic treatment.

#### **Discussion and Summary**

Regarding gingiva recession during orthodontic treatment, it is commonly suggested that the free gingival graft should be performed before orthodontic treatment if regional gingiva layer is insufficient. However, in our case, the managements for gingiva recession were delayed until the teeth around the surgical site were well aligned. It was due to the fact that proper alignment of dentition could create the desired housing of alveolar bone. The outcome of gingiva grafting was stable, and periodontal condition was well controlled after periodontal management was completed.

#### No. 49

Treatment of Upper Molar Replacement and Lower Molar Uprighting with



## Miniscrew - A Case Report

#### **Jung-Hsuan Cheng**

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#### Objective

Molar uprighting and molar replacement are the common treatment in orthodontist's daily work. In this case, forced eruption of third molar for avoid inferior alveolar nerve damage is assisted with ramus miniscrew. All the treatment will be discussed.

#### Case

This case report describes the treatment of a 31-year-old female with Class II division 1 subdivision malocclusion. She was diagnosed as severe lower crowding dentition, a large overjet, convex profile. The lower right second premolar is impaction.So, the molars mesial tipping were performed. The lower left third molars root tips near the inferior alveolar nerve. According to the suggestion by surgeon, patient wanted to let impacted lower third molar forced eruption with miniscrew. The treatment involved extraction of upper first molars and lower right second premolar.

#### **Discussion and Summary**

The treatment started on 11/03/2015. The finally detailing had not finished. But the upper molar replacement and lower right molars uprighting presented acceptable result. Recently, the miniscrew helps molar upright increase the treatment effency. And the patient may be afraid of the third molar extraction due to nerve damage. So, the ramus screw can let the impacted molar root tip become away from the nerve in order to avoid the numbness feeling appearance.

In this case, the bilateral second and third molars replaced the first and second molars could be the good option due to remove the poor prognosis first molars. And the option decreased the dental prosthesis demand. Although the treatment is still not finished, the combined forced eruption, uprighting, and replacement treatment will become more popular in the orthodontist's daily work.

#### No. 50

## The Report of Applying a Clear Orthodontic Aligner System in Treating a Female Patient of Dental Class II Division 1 Malocclusion

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#### Objective

Although the concept of aligner

treatment had arisen in early twentieth century, the relevant computerized system has not welldeveloped and introduced into orthodontic treatment. The number of orthodontic patients treated with clear aligner accompanied with modernized material technology has increased since last decade. Through clinical practice, aligner application in orthodontics now is believed to be effective in certain circumstances such as tipping, arch distalization and vertical control. This case report aims at presenting a young female patient with Class II division 1 malocclusion and bimaxillary dentoalveolar protrusion treated by Invisalign® system. Simulated tooth movement of planning derived from a digital model (Clincheck®) was compared with the actual clinical result.

#### Case Report

The 25-year-old female patient was originally concerned about her "crooked front teeth". On examination, she presented Class II division 1 malocclusion on Skeletal Class I pattern with bimaxillary dentoalveolar protrusion, average mandibular plane angle and convex profile. Intra-oral examination revealed 4.5-mm overjet, 4-mm overbite and the upper dental midline shifted to the right by 1 mm. Both arches demonstrated mild crowding and cephalometric analysis confirmed her proclined incisors. The treatment strategies included sequential distalization, interproximal slicing and alignment in the first course of treatment course. Class II elastics were applied during refinement period.



Total treatment period lasted for 27.8 months, including 19.5-month of first course and 8.3-month of refinement. Treatment outcome revealed the treatment goals were successfully achieved both objectively and subjectively.

#### **Discussion and Summary**

With its growing application in orthodontic treatment, the clinicians using aligner will inevitably face the challenges in predicting or planning the simulated tooth movements. The fundamental principles in terms of treatment planning and mechanics in controlling tooth movement will be still the key issues although increasing number of successful treatments by this aligner system has been claimed.

Through this case presentation, orthodontic treatment by applying aligner system can achieve successful and optimal clinical result with the focus on proper case selection, careful monitoring and timely refinement.

#### No. 51

Surgical Management in Treating a Female adult Patient with Ankylosed Temporomandibular Joints, Mandibular Hypoplasia and Obstructive Sleep Apnea

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#### Objective

Orthognathic surgery combined with reconstructive modalities for managing congenital or acquired craniofacial deformities has been widely applied. Reconstructive modalities in craniofacial region may include multiplanardistraction osteogenesis, reconstruction of temporomandibular joints with bone graft, mandibular or maxillary reconstruction with free fibular osteocutaneous flap. These treatment procedures require interdisciplinary approach (such as combination treatment with orthodontics) in order to gain good results of facial profile, dental occlusion and masticatory function.

#### Case

A 21-year-old female patient possessed severeClass II div.1 malocclusion with ankylosed temporomandibular joints, mandibular hypoplasia andobstructive sleep apnea. The patient had been suffering from burning wound over her lower face, neck, forearms and fingers at the age of 3. She developed hands contracture with limited fingers movement due to hypertrophy scar. Meanwhile she also presented anextremely limited jaw-opening due to ankylosed temporomandibular joints resulted from prolonged wear of elastic bandage for controlling facial scarring. Relevant surgeries to manage these problems were carried out at the age of 6, including release of flexion contracture sites of hands and neck, temporomandibular joints reconstruction with costochondral graft. And reconstruction of shortened ramus was conducted at the age of 18 with microsurgical transfer of fibular osteocutaneous flap. This case report presented 2-jaw orthognathic surgery (OGS) of this patient at the age of 21 to correct her severe Class II division 1 malocclusion with mandibular retrognathism and obstructive sleep apnea.

#### **Discussion and Summary**

Traumatic event (including burning) over craniofacial structure during childhood tends to produce significant malformations in jaw development. The surgical interventions aiming for improving skeletal discrepancy, obstructive sleep apnea and masticatory function have been utilized in this patient. Although the final orthognathic surgery was not carried out until patient's active growth has ceased. This was to ensure the outcome of occlusion and facial esthetics could be stable and satisfactory.

#### No. 52

Relapse of Mini-Screw Assisted Anterior Open Bite Correction a Case



## Report

#### Wun-Eng Hsu Tzu-Ying Wu Jenny Hwai-Jen Fong May-Ling Lee Shih-Chin Chen

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#### Objective

Patients with anterior open bite is always a tough challenge for orthodontists. Not only careful diagnosis of anterior open bite and the chosen treatment modalities. but also the way of retention are challenging. Etiology of anterior open bite could be multifactorial, and proper diagnoses are the key for making correct treatment plan and retention plan. Usually, orthodontist has to make the decision between camouflage and surgery, extraction and non extraction according to the diagnosis. Orthodontist should provide possible treatment modalities and explain the difference in long term stability, treatment outcome and treatment complexity. However, the final decision was hold by the patient.

#### Case

We presented a case with skeletal class II (ANB=6) due to maxilla prognathism with convex profile, class II molar relationship (OJ=6/5mm), high mandibular plane angle (SNMP=36.5), increased LAFH (87) and total gonial angle (130.5), super-erupted U1, U6, L1, and anterior open bite (OB=-0.5/0mm). The patient has mouth breathing habit and normal TMJ function. The treatment plan included 6 miniscrews in posterior teeth area. Miniscrews on bilateral infrazygomatic crest were used for distalization and posterior intrusion, 1<sup>st</sup> and 2<sup>nd</sup> quadrants palatal miniscrews were used for enhancing posterior intrusion, and those in mandible were used for vertical control. In retention phase, positioner was delivered.

#### **Discussion and Summary**

In 28 months of treatment, upper dentition was distalized, U6 were intruded (2.5mm)and U1 were extruded (3.5mm) to close the anterior open bite, also, a class I occlusion, balanced profile was achieved. In addition, U1 became retroclined (U1SN=92) along with U1 extrusion. In one year follow up, mild anterior open bite was noted. In this case, non-extraction treatment plan was chosen because patient didn't want to have tooth extracted. After finishing, we delivered positioner in order to stabilize the occlusion and increase contact of the tooth, however, the compliance was questionable. The long term stability of cases with open bite were always been challenging for orthodontists, and the causing factor of relapse in this case will be discussed in detail.

#### No. 53

## Clear Aligner Therapy to Correct Class III Malocclusion with Anterior Crossbite

#### Hsuan-Pei Wu Ling-Yu Chang Chi-Wei Chou Yi-Jane Chen

Division of Orthodontics and Dentofacial Orthopedics, Department of Dentistry, National Taiwan University Hospital

#### Objective

Esthetics is the major concern of many orthodontic patients. Clear aligners are esthetically more pleasing compared to conventional fixed orthodontic appliances. Herein we report a case treated with clear aligner to correct mal-alignment of upper incisors and Class III malocclusion.

#### Case

The female adult patient asked for correction of anterior teeth malalignment without the use of fixed braces. She presented a Class III malocclusion with functional shift of mandible. The upper central incisors were palatally inclined and cross-bite with lower incisors. Bilateral lateral incisors were pegshaped. Severe discrepancy of arch width and uncoordinated arch forms were noted for the upper and lower arches. After thorough discussion, the patient was treated by digital orthodontics using inhouse fabricated clear aligners. The treatment was completed with 14 aligners for the upper arch and 10 aligners for the lower arch.

#### Discussion and summary

In addition to correction of anterior cross-bite, stable occlusion was established. The patient was very satisfied with the improvement of dental and facial esthetics. The



workflow will be discussed in detail, including scan of model, set-ups of virtual models, print-out of model set-ups, and fabrication of aligners.

#### No. 54

## Congenital Missing of Maxillary Lateral Incisor: A Case of Orthodontic Treatment with Canine Substitution

#### 王致為、王凱隆、張恆銘、謝順築、 何國慶

秀傳醫療財團法人彰濱秀傳紀念醫院

Congenital missing of maxillary lateral incisor is one of the most common case scenario in our daily work. There are three treatment options to deal with the missing teeth, which includes canine substitution, tooth-supported restoration, and single implant. These options should be considered according to patient's age, smile esthetics and function. Here presents a case with skeletal and dental class I malocclusion and moderate space deficiency. Canine was protracted to substitute for the missing lateral. In this case, we successfully relieved dental crowding as well as replaced the missing lateral by canine. By this treatment approach, we avoid any dental prosthesis and bring decent smile esthetics to this patient.

## No. 55 Combined

## Multisegmental Surgical-Orthodontic Treatment of Skeletal Class III with Facial Asymmetry and Gummy Smile

#### Hui-Ling Chen 陳慧玲

Department of orthodontics, Chang Gung Memorial Hospital, Linkou branch, Taiwan 林口長庚紀念醫院齒顎矯正科

The excessively gingival display during smiling is an esthetic problem for some patients and has been treated by orthodontics alone or combined with orthognathic surgery, based on its etiology and clinical expression. When the gummy smile and obvious facial asymmetry are the chief complaint of the adult patient, the orthodontic treatment combined with surgery may be the favorable treatment option due to the more significant skeletal improvement and more esthetically pleasing result.

Here we present a case of skeletal class III malocclusion with facial asymmetry, gummy smile, and maxillary canting, treated with bimaxillary surgery. The two jaw surgery was performed including a 3-piece LeFort I segmental osteotomy for asymmetrical posterior impaction, anterior segment impaction with clockwise rotation, and a bilateral sagittal split osteotomy with genioplasty for mandible setback and chin deviation correction. Good treatment results were achieved by dramatically improved facial asymmetry, straightened facial profile and lip posture, and good interdigitation with proper overbite and overjet. Patient was quite satisfied with the consonant smile arc and the pleasing smile.

#### No. 56

## Treatment of Mandibular Prognathism with Facial Asymmetry

#### Yu-Ting Wu<sup>1,2</sup> Chih-Chen Chou<sup>1</sup> Hoi-Shing Lu<sup>1</sup> Chia-Tze Kao<sup>1,2</sup>

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#### Objective

The purpose of this report is to show the interdisciplinary treatment on the case of mandibular prognathism with facial asymmetry.

#### Case

A 24-year-old male complained of facial asymmetry and difficulty in biting food. After initial evaluation, the diagnosis was skeletal class III malocclusion combined with facial midline deviating to theleft side. The treatment plan was orthodonic therapy combined with orthogathic surgery. Afterleveling and alignment, the patient was referred to oral and maxillofacial surgery department for LeFort I three piece osteotomy and bilateral



vertical ramus osteotomy; the right side of mandible was setback for 6mm and the left side was setback for 4.5mm. After another 1 year, the whole orthodontic treatment was done, and the patient was satisfied with the outcomeof facial symmetry.

#### **Discussion and summary**

There are many orthodontic cases needed interdisciplinary therapy currently.

To achieve good orthodontic treatment quality, it should be beyond the boundary that an orthodontist not only treats the patient's malocclusion, but also gives the patient good esthetic and oral function.

#### No. 57

## Treatment of an Adult Patient with Class II Subdivision Malocclusion and Bimaxillary Dentoalveolar Protrusion

#### Chun-Hsiu Yang<sup>\*1</sup> Chun-Liang Kuo<sup>1,2</sup>

<sup>1</sup>Department of Orthodontics, Chi Mei Medical Center <sup>2</sup>Center for General Education, South Taiwan University of Science and Technology

A 23-year-old adult female patient had a bimaxillary dento-alveolar and lip protrusion complicated with incisors proclination and crowding of both arches. Intra-orally, Angle class I molar relationship on the left side and class II molar relationship on the right side were present. The maxillary midline was coincident with the mandibular midline. Maxillary space deficiency of right side was more prominent than left side. The treatment plan was extraction of teeth 14, 24, 34, 44, and one miniscrew insertion of right maxillary infra-zygomatic crest. During the treatment, lip incompetence was corrected. The duration of the orthodontic treatment was 2 years and 2 months.

Anchorage control during tooth movement is one of the main factors for ensuring successful orthodontic treatment. In adults with bimaxillary protrusion, treatment often requires premolars extractions and maximum anchorage. Due to the more space deficiency of the maxillary right side, the ideal treatment option was to strengthen orthodontic anchorage by the assistance of the miniscrew for the class II molar side, which was corrected by the distalization of the maxillary molar and less mesialization of the mandibular molar. Therefore, more significant improvement of the facial profile was achieved.

#### No. 58

Case report: Uprighting a Horizontally Impacted Lower Second Molar with Accessory NiTi Wire with Compressed Vertical Loop

**Han-Wen Yang** 

#### Min-Lun Hong Liang-Ru Chen Hsin-Yi Lo

Taichung Veterans General Hospital, Taichung, Taiwan

#### Objective

To observe the treatment result of uprighting a horizontal impacted molar with an accessory NiTi wire.

#### Case

When confronting a horizontal impacted molar, we chose to overlay a NiTi accessory wire with a compressed vertical loop at the mesial side of the impacted molar to upright it. In our case, a 16-yearold female, with skeletal class I, normal FMA, had an impacted #47. Due to severe space deficiency, full unit molar class II and larger overjet was observed. Furthermore, a right side posterior openbite was shown because of the horizontally impacted #47 and distally tipped #46. The treatment included extraction of #14. #24. #45 to relief crowding, and upright the impacted #47 with an overlay accessory NiTi wire. The NiTi wire was compressed with a vertical loop between tooth #47 and #46, which produced a space opening force and meanwhile a uprighting force. After 6 months, the #47 was successfully uprighted and leveling with other teeth in the lower arch. The treatment result was satisfactory. This uprighting approach was also used in many cases.

#### Discussion and Summary

Traditionally, there are many ways of uprighting the horizontally impacted molar. Many of them incorporate complex wire bending 中華民國齒顎矯正學會 第十五屆第一次會員大會暨學術演講 Taiwan Association of Orthodontists

The 29<sup>th</sup> TAO Annual Meeting



techniques that are difficult and time consuming, and some of the appliances may be too bulky and complicate to keep oral hygiene and cause tissue irritation as well. As the progress of the wire materials, NiTi wire has the excellent properties to create a light and continuous force which is ideal to upright the molar and reduce the complications. The patient could keep oral hygiene easily and minimal tissue irritation was seen. The most importantly, the appliance was easy to be placed and the activation method was simple. Also the direction of the tooth movement can be predict and under control. However, it had the disadvantages of uneasy to create proper tooth movement when the neighbour teeth were not well aligned. Nevertheless, the accessory NiTi wire with a compressed vertical loop still offered a good method for treating a horizontally impacted molar.

#### No. 59

## Recovering Deep Lower Canine Impaction - A Case Report

#### Yen-Chuan Huang

Taichung Veterans General Hospital

#### Objective

To recover deep lower canine impaction

#### Case

This case report describes the orthodontic treatment of a 10-yearold girl with mild class II dentition on class II skeletal base, with mild crowding, protrusive upper lip and lower right canine impaction. There was a 4cmX3cm cyst over right mandibular body with delayed exfoliation of right lower primary molars. The cyst was enucleated 3 months before the orthodontic evaluation. CBCT showed the canine was horizontally impacted with crown at distal-buccal side and root at mesial-lingual alveolar bone right beneath the lower right first premolar, which fully occupied the canine space.

The canine space was regained with open coil spring. After creating 5mm space, although the CBCT showed that canine was still horizontally impacted under first premolar, the canine emerged a tip of its cusp at buccal vestibule area, so we could place a lingual button without surgical exposure. A vertical loop and then K-loop formed with 16X22 TMA was made to upright the root of the canine, with a buccal, anterior and occlusal force direction, which was also favorable for advancing the canine to the mesial side of first premolar.

The result showed fully-recovered canine with proper root direction and ideal gingival contour.

#### **Discussion & Summary**

A dilemma of whether to extract the impaction was faced. Extraction of #43 impaction might reduce treatment time but it was impacted under 1st premolar and hard to access. Furthermore, there would be a large bony defect left; while recovering canine would simultaneously bring up the bone occlusally. Therefore, an attempt to recover the canine was made with partial treatment.

Derived from this case report, its seems that partial treatment is still efficient and sometimes it can simplifying the mechanics and spare the side effects of other teeth when impaction was tried to be recovered. Designing the favorable force direction for root uprighting is important for obtaining an ideal functional and esthetic outcome of the impacted teeth.

#### No. 60

## Treatment Outcomes of Gingivoperiosteoplasty at the Time of Le Fort I Osteotomy

#### Yi-Chin Wang 王依靜 Yu-Fang Liao 廖郁芳

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#### Objective

To evaluate the treatment outcomes of OGS combined with GPP for repair of residual alveolar cleft in adult patients in terms of success rate, bone formation, periodontal bone support of cleft-adjacent teeth.

#### Materials and Methods

9 Patients with UCLP whopresent maxillary hypoplasia with significant residual alveolar clefts (age >16 for females, >18 for males) at the Chang Gung Craniofacial Center, Taoyuan were recruited in the study. A segmental Le Fort osteotomy



was performed to correct jaw discrepancy and approximate the bone gap between cleft segments and further repaired by simultaneous GPP to stimulate bone bridge formation between cleft segments. All patients underwent 2D periapical and occlusal radiography, and 3D cone beam CT before surgery, and 12 to 24 months after surgery for measurement of periodontal bone support of cleft-adjacent teeth and residual bony defect.

#### **Results & conclusion**

Two of nine patients still have nasoalveolar fistula after surgery. Five GPP patients showed bone bridge formation in certain levels. However, only 3 of 9 achieved clinical success in terms of amount of bone formation (Bergland scale I or II). The alveolar cleft width was reduced significantly after surgery (T0=  $5.4\pm1.9$ , T1=  $2.9\pm2.0$ , p<0.001). However, periodontal support of cleft –adjacent teeth was found to become less in some patients.

#### No. 61

Non-Surgical Orthodontic Treatment for Facial Asymmetry Patient with Unilateral Posterior Cross-Bite by Temporary Anchorage Device and Molar Extraction

I-Hua Liu

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#### Objective

The case of facial asymmetry is difficult in the orthodontic treatment and orthognathic surgery is usually the choice for the correction of facial asymmetry. At the same time, the facial asymmetry often accompanies with the existence of dental midline deviation even unilateral posterior cross-bite. This poster presents non-surgical orthodontic treatment for the correction of facial asymmetry and unilateral cross-bite malocclusion.

#### Case

This is a 37 year-old male patient with right Class II and left Class III malocclusion that his chief compliant is tooth 15,25 residual roots and space loss. In the clinical examination, FM teeth malalignment, anterior and right posterior cross-bite, tooth 37 missing with antagonist tooth elongation, and facial asymmetry with chin and lower dental ML deviation to right side was noted. Beside tooth 15,25 residual roots need to extract, the treatment plan is decided to extract tooth 46 and distalize LL posterior teeth by unilateral temporary anchorage device (TAD) for the correction of dental ML deviation and right unilateral posterior crossbite. After orthodontic treatment finishing, bilateral canine and molar Class I relationship is achieved. The the anterior and right cross-bite also has been corrected simultaneously and facial asymmetry is improved by upper and lower dental midline

coincidence with facial midline.

#### **Discussion and summary**

The extraction of molar combination with TAD is one effective way of camouflage treatment without surgery for the facial asymmetry patient with unilateral posterior cross-bite and dental ML deviation.

#### No. 62

## Correction of a Severe Facial Asymmetry with Three-Dimensional Virtual Operation

#### Ya-Ying Teng

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Conventional methods of planning orthognathic surgery depend on two-dimensional images and model surgery. However, these provide limited understanding of the complex three-dimensional defects and are insufficient for comprehensive correction especially in yaw movement. With the advent of cone-beam computed tomography and computer software, three-dimensional (3D) computerassisted technology has been applied gradually in orthognathic surgery. Surgical simulation in 3D can provide a more accurate treatment plan especially in patients with complex jaw discrepancies. This case report described favorable postsurgical outcome for a patient with severe facial asymmetry and bimaxillary protrusion by using three-dimensional computer-



assisted surgical simulation.

#### No. 63

Post-surgical Softto-Hard Tissue Changes in Female Class III Patients – the Movements of Constructed Intermediate Landmarks of Facial Profile

#### Shiu-Shiung Lin<sup>\*</sup> Yu-Jen Chang Yin-Tai Chen Yi-Hao Lee

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#### Objective

The primary concern of female patients seeking orthognathic surgery is to improve their esthetics. The soft-tissue change of facial profile brought by surgical movement has been well demonstrated in those major cephalometric landmarks. Nevertheless, the behaviors of soft-tissue movements in the intermediate zone between two adjacent major soft-tissue landmarks of facial profile have not been systematically investigated. It is the aim of this study to look at the postsurgical soft-tissue change brought by 2-jaw orthognathic surgery in adult female patients presenting with Class III skeletal discrepancy.

#### Materials

Sixteen skeletal Class III adult female patients treated with 2-jaw orthognathic surgery (maxillary Le Fort I osteotomy and mandibular bilateral sagittal split osteotomy) were enrolled in this study. Pre-surgical and post-surgical cephalograms (3~6 months after the surgery) were both duplicated with 10% magnification ratio.

#### Methods

Cephalometric tracing was conducted. Selected major landmarks and constructed intermediate soft tissue landmarks were digitized. The surgical outcome and the correlation of soft to hard tissue changes were assessed. The error study of the method was also carried out to ensure that the error of the method can be neglectable.

#### **Results and Discussion**

The result demonstrated improvement of skeletal relationship and facial profile for all subjects. In horizontal and vertical direction, mandibular movement between soft-to-hard tissue ratio showed approximately 1:1 and 0.9:1 with strong correlation. The maxillary components presented moderate correlation except i-LS to U1E with movement ratio around 0.8:1 in horizontal direction and 0.6:1 in vertical direction. The paired groups in the nasal region presented weak correlation. The constructed intermediate landmarks demonstrated the ratios of movement and the correlation coefficients similar to the adjacent soft tissue landmarks. These results can provide clinicians with further more reliable landmarks to configure the planning profile.

#### No. 64

Development of a Device for Three-Dimensional Measurement of Orthodontic Force Systems Requiring High Operability

#### Wei-Jen Lai<sup>1</sup> Yoshiyuki Midorikawa<sup>2</sup> Zuisei Kanno<sup>1</sup> Takashi Ono<sup>1</sup>

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#### Objective

The optimum magnitude of applied force, and the moment-to-force ratio are important concerns in orthodontics. Although lacking of operability, the orthodontic simulator (OSIM) is one of the representative measuring devices in previous studies. The aim of this study was to modify the OSIM design and assess its effectiveness and reliability.

#### **Materials and Methods**

We developed a life-sized two-tooth model, and the measurements were performed using a custom-made jointed attachment, referred to as an "action stick", to allow clearance for the oversized six-axis sensors. This tooth-sensor apparatus was



accurately calibrated, and the error was limited. Vector analysis and rotating coordinate transformation were required to derive the force and moment at the tooth from the sensor readings. The device was then used to obtain measurements of the force and moment generated by the V-bend system in two types of common orthodontic wires made of stainless steel and beta titanium.

#### Results

The V-bend system test in our device provided results that were consistent with those of previous studies. The forces and moments were measured correctly in both wires so that our device was proved to be effective even in the comparatively low-stiffness material that produced lower magnitude forces.

#### **Discussion and Conclusion**

The incorporation of the force sensor is a key consideration in the development of the measuring device. Through the introduction of the action stick, the problem of the sensor size was resolved. the transformation equation and theory for this design was also elucidated in detail. Because setting and removing wires is convenient in modified design, it is beneficial in evaluation of force systems incorporating the bended wire and loop, which require frequent adjustment. Although a model with only two teeth was used in the present study, in can be expanded to models with more number of teeth with varying angles, lengths, and heights of the action stick.

#### No. 65

## The Effects of Orthodontic Extraction on Smiling Esthetics in Different Malocclusions

#### Hsin-Chung Cheng Yi-Chun Wang

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#### Objective

Smile esthetics is a critical factor for evaluating orthodontic treatment outcomes. The purpose of this study was to evaluate the esthetic perception and smile variables between extraction and nonextraction treatment in different malocclusions.

#### **Materials and Methods**

90 subjects from orthodontic department of TMUH were divided into three classifications according to their pre-treatment overjet, with 15 extraction subjects and 15 non-extraction subjects in each classification. The post-treatment frontal smiling photographs was standardized and evaluated by the raters that include 10 orthodontist, 10 general dentists and 10 laypeople. Smile variables were measured from the post-treatment photos.

#### **Results and Discussion**

Smile perception for class II extraction group was higher by orthodontist and general dentist. Despite extraction or not, class III subjects was rated lower than class I and class II subjects. Arch form index, upper incisor show and smile arc were larger for extraction group. For multiple regression analysis, non-extraction and class III were negatively correlated with esthetic score. Upper incisor show, tooth number display and buccal corridor were positively correlated with esthetic score.

#### Conclusions

Class II extraction was rated higher by dental professions. A smile with more upper incisor show, more tooth number display and adequate buccal corridor was thought to be more esthetic.

#### No. 66

## Development of Computer Learning System by Orthodontic Virtual Patients

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#### Objective

The concept of virtual patients (VPs) is introduced, and clinical scenarios based on interactive computer skills are used to help professional education of clinical training. The purpose of this study is to use

computer information to simulate the clinical situation, promote the training of orthodontic learners, assess clinical reasoning, and carry out orthodontic diagnosis and treatment programs.

#### Materials and Methods

The design of clinical orthodontics was used to introduce the concept of virtual patient, and the software design and development were implemented from the chief complaint, interrogation, examination, diagnosis (data collection), treatment planning, implementation and retention.

#### **Results and Discussion**

The results of this study are divided into three parts, the establishment of the main structure, the development of teaching plans and I-cloud architecture design. The series of tests and revisions on this program are also performed and good responses are noted by use of postgraduate orthodontic students.

#### Conclusions

In conclusion, the introduction of the concept on virtual patients through the development of computer software, which can promote the training of learners and assess the clinical logical thinking ability of orthodontic diagnosis and treatment planning.

#### No. 67

Comparison of Treatment Effectiveness between Orthodontic

## Mini Screw and Transpalatal Arch: A Meta-Analysis

#### See-Yen Chong Hsin-Chung Cheng

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#### Introduction

Orthodontic mini screw and transpalatal arch have been widely used as an intraoral anchorage during anterior retraction. The aim of this study is to compared the treatment effectiveness of these two mechanisms through the method of meta-analysis.

#### Methods

Following the guidelines and checklist provided by contemporary PRISMA, electronic database including Pubmed, cochrane library and ScienceDirect were used for paper searching. Papers that included in this study are randomized controlled trials. Expert opinions, case reports, case series, review articles, clinical trials without controls, controlled clinical trials were excluded in this study. Scientific paper searching in this study covered the period 1997 to December 2015 by suing the keywords mini-screw, mini-implant, temporary anchorage devices (TADs), transpalatal arch (TPA) and conventional anchorage. There are two reviewers execute the searching strategy, Cohen's kappa coefficient was used for measurement of the inter-rater agreement. Any disagreement was resolve by the first author.

#### Results

There are 2 randomized controlled trials about the comparison of treatment effectiveness between orthodontic mini-screw and transpalatal arch during anterior retraction met the inclusion criteria. The meta-analysis showed that after the anterior retraction, the horizontal and vertical measurement of upper incisor change significantly in TPA (U1-X: mean difference, -2.04 95% CI; U1-Y: mean difference, -0.56 95% CI) and TADs group (U1-X: mean difference, -3.00 95% CI; U1-Y: mean difference, -2.79 95% CI), as well as nasolabial angle (TPA: mean difference, 4.36 95% CI; TADs: mean difference, 0.23 95% CI) and upper lip to E-line (TPA: mean difference, -0.14 95% CI; TADs: mean difference, -1.43 95% CI).

#### Conclusion

This meta-analysis suggests that orthodontic mini-screw give a better result for anterior retraction in terms of upper incisor and soft tissue changes.

#### No. 68

Interdisciplinary Treatment of Angle's Class II Division 1 Malocculsion with Asymmetric Molars Extraction

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#### Objective

Good results for Angle's Class II division 1 malocculsion case with interdisciplinary treatment by implant prosthesis and orthodontic process.

#### Case

An 18-year-old girl with skeletal Class I jaw relation, average mandibular plane angle, Class II malocclusion with 12mm large overjet, 5 mm deep overbite and space deficiency, V-shaped upper arch form, and convex profile with mentalis muscle strain was presented in this case. Hopeless maxilla right first molar and mandibular left side first molar and second molar were decided to extracted, the orthodontic treatment substitute left side mandibular third molar for second molar.

After well alignment, ideal overbite and overjet was achieved, implant prosthesis of maxilla right first molar and mandibular left second molar were be fabricated.

#### **Discussion and Summary**

Multidisciplinary treatment established an ideal dentition and improved the facial profile. In addition, stable and functional occlusion improve the chewing efficiency. Finally, the treatment process is actually shorten and efficiently.

#### No. 69

Orthodontic Treatment with First Premolar Substitution for Canine in Teen Patient with Impacted Maxillary Canine – A Case Report

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Permanent maxillary canine impaction has been reported in about 1% to 2% of the population. This makes the maxillary canine the second most commonly impacted tooth, after third molars. The orthodontic treatment of impacted maxillary canine remains a challenge to today's clinicians. The treatment of this clinical entity usually involves surgical exposure of the impacted tooth, followed by orthodontic traction to guide and align it into the dental arch. Bone loss, root resorption, and gingival recession around the treated teeth are some of the most common complications. If the occlusion is acceptable, with the first premolar in the position of the canine and with

an otherwise functional occlusion with well-aligned teeth, extracting an impacted canine is alternative treatment option.

A 11-year-old girl patient came for orthodontic treatment with the complaint of crowding and impacted maxillary canine. The lateral view of the patient revealed a convex lateral facial profile. Skeletal diagnosis was Class II relationship with recessive chin. Dental diagnosis was Class II malocclusion with tooth 22 peg lateral, tooth 23 impaction and tooth 63 retained. Tongue thrusting and tongue-tied were also noted. Consideration about her lateral profile and dental condition with well-aligned upper left first premolar, treatment plans were tooth substitution combined extraction of teeth 14, 23, 34, 44 and 63, and resized tooth 22 to normal size. Frenectomy was implement for tongue-tied and tongue training was given for tongue thrusting. Full mouth was bonded with ceramic Tip-Edge brackets.

Total active treatment time was 33 months. Treatment outcome showed tooth 13 to 43 Class I, tooth 24 to 33 Class I relationship and bilateral molar Class I relationship were achieved. Maxilla was downward growth and mandible was downward and forward growths. Mandibular plane angle was maintained. Upper and lower lips were retracted and lateral profile was improved. Patient and her family were satisfactory about the treatment result.

## No. 70 Interdisciplinary



## Dental Treatment for a Patient with Severe Periodontitis - Case Report

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#### Objective

This case report describes a patient who received periodontal, prosthetic, endodontic, and orthodontic treatment to obtain a healthy periodontium, balanced occlusion and acceptable esthetics.

#### Case

A 30-year-old female with complex clinical problems came to our hospital for treatment. Clinical examination revealed Class I molar relationship, proclined upper and lower incisors with 6 mm overjet, missing of lower left second molar, mild crowding in the upper and lower anterior region. The patient was diagnosed as advanced periodontal disease with generalized bone loss. The periodontal treatment consisted of scaling, root planning, and oral hygiene instruction for one year. After the periodontal disease control stage was completed, we used self-ligated brackets, a sequence of archwires, and interproximal reduction to eliminate the appearance of the black triangle. During 15-months active treatment, we transplanted the upper right third molar to lower left edentulous

ridge and placed an implant after extracting upper left lateral incisor. After appliance removal, a removable vacuum form retainer was placed in the upper arch, and a lower canine-to-canine lingual retainer was bonded. The final results achieved after prosthodontic treatment. We significantly improved the patient's facial and dental esthetics, masticatory function, and quality of life. She was pleased with the result provided by the various dental specialties.

#### **Discussion and Summary**

Orthodontic treatment for patients with periodontal disease, a long movement of the teeth over their biological limits should be avoided to prevent crestal alveolar bone loss and the orthodontic force would need to keep light due to reduced periodontal support. The use of selfligated brackets and bonded molar tubes could accumulate less plaque than conventional brackets and bands, thus improving oral hygiene. In this case, we demonstrated that interdisciplinary approach is critical and successful for adult patients with full mouth chronic periodontitis and malocclusion.

#### No. 71

Orthodontic Treatment of Angle's Class II Division 1 Malocclusion with Space Deficiency and Long-Term Follow up

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#### Objective

Orthodontic Treatment of Angle's Class II division 1 malocclusion with large overjet and deep overbite will be discussed.

#### Case

The case report presents a case of 12-year-old girl with skeletal Class I jaw relation, lower mandibular plane angle, Class II malocclusion with space deficiency, the 10 mm large overjet, 3 mm deep overbite, V-shaped upper and lower arch form, and mild convex to straight profile. The orthodontic treatment involved extraction of impacted upper right side second premolar, left side first premolar to retract upper anterior teeth and arch expansion.

#### **Discussion and Summary**

The total treatment time was about 23 months. After the treatment, we established an ideal overjet and overbite, stable and functional occlusion. The facial profile was also improved. During 3 years follow up, the occlusion is stable.

In several decades there have been many treatment modalities for cases of Angle's Class II division 1 malocclusion. Although the girl's profile was straight, but she had large overjet, extraction of maxillary premolar to reduce large overjet



could achieve move stable occlusion and get balanced profile.

#### No. 72

上顎犬齒及小臼齒錯 位之矯正治療-病例報 告

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#### 目的

犬齒錯位是口腔內常見的牙齒 錯位,主要發生在上顎犬齒及第一小 臼齒處,其發生率約為0.3 %。男性 及女性發生率大致相似,單側發生機 率高於雙側,左側發生機率高於右 側,上顎發生機率高於下顎。雖然犬 齒錯位的機制尚未有定論,但推測與 遺傳、乳犬齒的延遲脫落,骨性病變 (例如囊腫)以及外傷有關。

#### 病例

本病例中病患就診時為17歲女 性,主訴為左上犬齒阻生, 經放射 線及口內檢查可發現左上犬齒牙冠位 於第一小臼齒夾側面,牙根位於第一 小臼齒及第二小臼齒之間,口內其餘 牙齒排列大致整齊,且病患側面外觀 良好,考慮左右牙齒的協調性及犬齒 導引,因此治療計畫為不拔牙之矯正 治療,將犬齒牽引回原本位置並排列 整齊,達到良好咬合。治療方法是利 用鄰接面去釉處理及矯正迷你骨釘來 騰出空間,之後使用單顆牙控根簧將 阻生犬齒慢慢拉回其原有位置。總治 療時間為兩年八個月。

#### 討論與結論

此病例中之病患右上犬齒為完 全錯位牙,完全錯位牙一般治療方式 是按照原先錯位部分去排列整齊,本 案例因家屬意願想要將錯位牙排回原 有位置,才利用矯正迷你骨釘協助復 位。牙齒沒有病理性變化,牙弓空間 大致足夠,且病患外觀良好,因此選 擇非拔牙及將犬齒牽引至原有位置治 療方式。利用此方法可避免第一小臼 齒取代犬齒時過多的咬合調整而傷害 到牙髓組織,且左右牙弓有一致的咬 合型態。但犬齒的牙根型態要先確認 避免發生嚴重的牙根吸收。

#### No. 73

## Surgical Orthodontic Treatment of Class III Malocclusion with Surgery First Approach - A Case Report

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#### Objective

Skeletal class III malocclusion is a common skeletal deformities in Taiwan. It may arise from maxillary retrusion, mandibular prognathism, or both. In some difficult case, orthodontics combined orthognathic surgery treatment are indicated. To correct mandibular prognathism, intraoral vertical ramus osteotomy (IVRO) is a common surgical technique for clinical practice. Genioplasty could also be combined to enhance the facial balance and esthetics.

Surgery-first approach (SFA) is a

concept and technique focuses on regional acceleratory phenomenon, sometimes could offer advantage for early esthetic establishment.

#### Case

This case is a 21 year-old chinese female, her chief complaint are mandibular prognathism and anterior crossbite. After orthodontic examination, she had skeletal Class III jaw relation, orthodivergent facial pattern and dental Class III malocclusion with anterior crossbite. The overbite was 9.5mm and overset was -4.5mm. Her profile was concave facial pattern. She received surgery first approach with bilateral intraoral vertical ramus osteotomy (IVRO) and genioplasty for mandibular setback. After surgery, she had a much more straight facial pattern, also her overbite and overjet are within acceptable range. She is now under post-surgical orthodontic adjustment.

#### Conclusion

SFA for correcting skeletal malocclusions has the advantages of shortened total treatment time and early response to a patient's need, there are limitations particularly relating to careful case selection, adequate diagnosis, prediction and simulating correction with the model setup is required. Rough decision for SFA may even prolong total treatment time and increase difficulty of treatment, cautious and careful evaluation should done before treatment.

## No. 74 Non-Extraction Orthodontic



## Treatment of Class III Malocclusion with Anterior Open Bite — A Case Report

#### Yu-Hsin Lee 李祐欣 Wen-Ting Lin 林汶亭 Yin-Hui Chu 竺翼飛 Yu-Chuan Tseng 曽于娟

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#### Objective

Patients who were Class III malocclusion with skeletal open bite would like to have ideal occlusion and profile by orthodontic treatment and orthognathic surgery. Some cases, like mild skeletal discrepancy and patient with no intention of OgS, after careful diagnosis and treatment planning, could also achieve balance occlusion and profile by non-surgical orthodontic treatment. But we still need to pay attention to the postoperative stability of dentition and occlusion.

#### Case

This case report was a 22 year-old adult patient. His chief complaint was anterior open bite. He hoped to improve occlusion by non-surgical orthodontic treatment. By clinical examination and cephalometric analysis, the diagnosis were skeletal Class I malocclusion with anterior open bite, hyperdivergent facial pattern, non-coincident dental midline, tilted occlusal plane and lower anterior teeth protrusion. The patient would be given a nonextraction orthodontical treatment. We had a plan to close anterior open bite without teeth extraction due to his good facial profile. To close the anterior open bite, upper and lower anterior teeth would be extruded and posterior teeth were be intruded. We used TADs which were implanted over para-median, bilateral IZC and buccal shelf to intrude upper molar and distalize protrusive lower incisors. The most important thing was myofunctional therapy and patient's compliance

#### **Discussion and Summary**

After 3-year treatment, this patient obtains favorable profile and acceptable occlusion. Comparing with pre-treatment profile, the appearance becomes more harmonious and confident. Although the lower dental midline slightly shifts to left side, it doesn't interfere the occlusion. This case report will present and analyze mechanism of treatment, as well as the pretreatment and post-treatment changes.

#### No. 75

## Orthodontic-Surgical Treatment of a Patient with Bilateral Cleft Lip and Palate

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The management of cleft lip and palate (CLP) often requires an interdisciplinary provides comprehensive care. This case report presents an interdisciplinary approach for the care of a cleft patient.

A 18-year-old male with complete bilateral CLP had a chief complaint of wide cleft and unesthetic appearance of his teeth. His clinical and radiographic examination showed facial asymmetry, prominent and downward displaced premaxilla, wide alveolar cleft, lack of labial sulcus, oral nasal fistula (ONF) on both sides, Class II skeletal relationship (ANB=100) with maxillary arch constriction and occlusal plant cant. Both upper lateral incisors are in palatal cleft site. His treatment plan was surgical orthodontic combined with the extraction of the maxillary right lateral incisor. After regain spaces for teeth 12, 22 and the improvement of upper lateral crossbite by orthodontic treatment, the patient underwent a two-jaw surgery. For the maxilla, 3 - piece LeFort I ostetotomy was performed to protract the buccal segments and correct occlusal canting. In the mandible, a bilateral sagittal split osteotomy with autorotation to correct retruded chin and genioplasty was also performed. Postsurgical orthodontic treatment included management of deviated upper midline, negative overjet, finishing and detailing of the



occlusion. The duration of treatment was 18 months.

The treatment outcome showed a symmetrical face, a good occlusion as well as the patient satisfaction. In conclusion, interdisciplinary treatment was necessary for an adult patient with complete bilateral CLP to achieve a proper occlusion and better esthetics.

#### No. 76

## Surgical-First Orthognatic Surgery in Skeletal Class III with Openbite - A Case Report

#### Lan-Tien Lin Yuen-Yung Tsang Yi-Min Liu

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#### Objective

Surgical first orthognathic surgery (OGS) has became more and more popular, since it improves facial esthetic from the beginning of treatment, shortens the treatment time, and accelerates tooth movement with the effect of regional accelerated phenomenon (RAP). This report is to present a surgical-first orthognatic surgery for correction of a skeletal Class III with anterior openbite case.

#### Case

The 20Y6M female patient came to our clinic, complaining mandible prognathism. With excessive vertical height and large maxillamandible AP bone discrepancy, orthodontic treatment combined with orthognathic surgery was suggested. Patient was unwilling to suffer the decompensation and the temporary worsen of facial appearance, so surgery-first OGS technique was recommended after evaluating it's feasibility via 3D simulation. After surgery (LeFort I osteotomy impaction and bilateral sagittal split osteotomy setback), better profile with positive overbite and overjet was achieved. The post-surgery orthodontic treatment took another 22 months (patient was abroad half year for student exchange) to finish.

#### **Discussion and summary**

The reversed overbite and overjet was initially corrected by surgery. But the transverse problem was purely solved by orthodontic treatment, which took quite some time. However, the final outcome was satisfying. Facial profile improved, Class I occlusion obtained, and ideal overbite and overjet attained.

#### No. 77

Surgical First Approach in Orthodontic Correction of Skeletal Class III Malocclusion - A Case Report

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#### Objective

When facing patient with severe skeletal Class III jaw relation and hyperdivergent facial pattern, surgical orthodontic treatment may be the ideal treatment plan. Patient who has well-aligned to mild crowding teeth, flat to mild curve of Spee and minimal transverse discrepancy, surgery-first approach could be applied. The surgery-first approach orthognathic surgery decrease treatment time and avoid worsening of facial profile in presurgical orthodontic treatment.

#### Case

This patient was a 22-year-old adult female and her chief complaint was mandibular prognathism. After orthodontic examination, she has skeletal Class III jaw relation, hyperdivergent facial pattern and dental Class III malocclusion with anterior crossbite.

She received surgery first approach with bilateral intraoral vertical ramus osteotomy (IVRO) and genioplasty for mandibular setback. Then, she had post-surgical orthodontic adjustment. After 19 months treatment, anterior crossbite was corrected with normal overjet and overbite. Skeletal Class I jaw relation was achieved by orthognathic surgery. Besides, facial esthetics was improved.

#### No. 78

Correction of Unilateral Posterior Crossbite and Facial Asymmetry with Maxillary



## Posterior Segmental Osteotomy and Mandibular Corticotomy - A Case Report

#### Ming-Yuan Tian Chi-Ying Huang Ming-Hsien Lan Chung-Chen Jane Yao

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#### Objective

A symmetry caused by a complete buccal crossbite can compromise aesthetics and impair occlusal function. Surgical correction of this type of asymmetry is usually required. Here we report a patient receiving maxillary posterior segmental osteotomy and mandibular corticotomy to correct this severe crossbite.

#### Case

A 15-year-old male, showed right complete buccal crossbite, chin deviation to left side and midline discrepancy. Occlusal plane was right side down canted. CO-CR discrepancy was noted at transverse dimension. This functional shift led to mandibular asymmetry. Cephalometric analysis indicated a skeletal Class I and dental Class I malocclusion. Hand plate revealed the growth almost completed. Comprehensive orthodontic treatment was combined with orthoganthic surgery, i.e., posterior segmental osteotomy to impact and constrict the arch form

at upper right posterior region, and corticotomy at lower right posterior region to stimulate tooth movement for enhancing treatment efficiency. After surgery, lingual holding arch expanded intermolar width and transpalatal arch constricted maxillary arch. Miniscrews at bilateral upper posterior and lower right quadrants were then implanted for upper intrusion and distalization, and lower expansion and intrusion. After treatment, the patient had a more symmetrical facial appearance, normal overjet and overbite, and centered midlines.

#### **Discussion and Summary**

This type of unilateral posterior crossbite and facial asymmetry was treated efficiently with comprehensive orthodontic treatment and orthognathic surgery. When a functional shift was detected, lengthy and aggressive camouflage type of treatment using TADs alone no longer provides treatment of choice. After elimination of the locked mandibular position by impaction of right maxilla, uprighting and intrusion of excessive lingual tipped lower right buccal segment and retraction of upper dentition were performed with TADs.

#### No. 79

Treatment of Skeletal Class II Division 1 Malocclusion with Severe Overjet and Deep Bite Patient Using Multiple Functional

## Orthodontic Appliances

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Over the past few years, there has been considerable debate on the advantages of early orthodontic treatment for Class II Division 1 malocclusions. The controversy is about the treatment timing, as we know that the early orthodontic treatment is separated two phases. Phase I is treatment with a functional appliance when the child is 7 to 10 years old, and the object is correction of Class II skeletal discrepancy. This is followed by phase II treatment with fixed appliances when the permanent dentition is established. The advantages of early orthodontic treatment is the early improving esthetic appearance and incremental psychosocial functions and experiences, but its disadvantages is increased total treatment time. Therefore, we reported the case, who had severe class II division 1 malocclusion, large overjet and deep bite, received early treatment and over 5-years follow up. The effectiveness of early orthodontic treatment were discussed in this case report.



#### No. 80

## Surgical-Orthodontic Treatment of Bimaxillary Protrusion: A Case Report

#### Jou-En Huang Szu-Ting Chou

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#### Objective

Bimaxillary protrusion is a common deformity in Asians. The facial esthetics is the major concern of the patients. It could be treated by orthodontic treatment alone or orthodontic combined with orthognathic surgery.

#### Case

This report presents a case of 19-year-old female with chief complaint of snaggletooth. Clinical examinations showed dental Class I bimaxillary dentoalveolar protrusion with protrusive lips, lip incompetence, mentalis muscle strain, and gummy smile. Cephalometric analysis revealed skeletal Class I jaw relation and hyperdivergent facial pattern. After pre-surgical orthodontic leveling and alignment, maxillary and mandibular anterior segmental osteotomy and genioplasty was performed.

#### **Discussion and Summary**

In bimaxillary protrusion, orthognathic surgery is required to correct significant skeletal problems and to obtain better esthetics. In this case, facial esthetics was achieved after the surgery.

#### No. 81

## An Efficient Approach to Intrude Supra-Erupted Lower Posterior Teeth - A Case Report

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Prolonged missing tooth consequently results in supraeruption of antagonist tooth and tilting of neighboring teeth. All those consequences make it difficult for further prosthetic reconstruction. Although the application of temporary anchorage device at buccal and palatal sides has been proved to efficiently reposition supra-erupted upper posterior teeth, Intrusion of lower posterior teeth is still a challenge in adult orthodontics. The case report showed a 50-yearold female patient came with supraerupted lower posterior teeth. A modified biomechanical design was employed to totally intrude lower posterior teeth without bucco-lingual tilting.

#### No. 82

## Non-Surgical Orthodontic Treatment of Skeletal Class III Malocclusion – A Case Report

#### Angelia Chen<sup>1,2</sup> Ru-Jiun Shiau<sup>2</sup> Yu-Chuan Tseng<sup>1,2</sup>

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#### Objective

To treat the patient with Class III malocclusion and anterior crossbite

#### Case

This is a case of 22 year-old female, who cares about the spacing in her dentition. Clinical examination revealed concave profile, anterior crossbite, Cephalometric analysis showed Class III skeletal jaw relation, hypodivergent facial pattern, retrusive upper incisor, and protrusive lower incisor. There is also spacing between 34-44. The patient preferred orthodontic camouflage treatment. The total treatment period was 26 months. Acceptable overbite and overjet, Class I molar relation, and wellaligned dentition was also achieved.

#### **Discussion and Summary**

The non-surgery treatment for Class III patients with anterior crossbite was acceptable. With the

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space in the mandibular arch and hypodivergent facial pattern are favorable factors to correct Class III relation.

#### No. 83

## Surgical-Orthodontic Correction of Skeletal Class III Malocclusion with Anterior Openbite and Facial Asymmetry

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Although conventional twodimensional (2D) methods for orthognathic surgery planning are mainstream, more and more people use additional three-dimensional (3D) simulation for improving accuracy of surgical planning recently. The three-dimensional (3D) image also can be a good tool to communicate between patient, orthodontist and surgeon.

This case report presents the treatment of a patient aged 22 years old with Class III skeletal malocclusion.The facial asymmetry, anterior open bite, and crowding over upper dentition was noted. Orthodontic appliances was placed at the beginning of treatment for 4 months. After presurgical orthodontic treatment, double-jaw surgery was performed. 3-dimensional conebeam computed tomography-based treatment planning was done before surgery. The total active treatment time was 10 months including surgery. Good esthetic and occlusal outcomes were obtained in this patient.

#### No. 84

## Orthognathic Surgery Combined with Implants Reconstruction for Edentulous Anterior Maxilla

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#### Objective

Maxillary implants can be challenging due to the anatomy and biomechanics limitation, especially in the patients with Class III malocclusion and an atrophic ridge of maxillary arch. For such patients, orthognathic surgery was often required before prosthetic rehabilitation. However, the surgicalorthodontic treatment planning often poses difficulties in pre-surgical prediction and post-surgical fixation of orthognathic surgery. This clinical report describes a comprehensive multidisciplinary approach that involved the teamwork by prosthodontists, orthodontists, and oral and maxillofacial surgeons.

#### Case

A 25-year-old female presented a retrusive maxilla with anterior edentulous ridge after trauma. She had a traffic accident which caused her maxilla fractured, teeth 14-11 & 22 avulsion, and teeth 21, 23, 24 crown fracture. The extraoral examination showed concave lateral profile and chin deviated to right side. Her treatment plan comprised orthodontic treatment combined orthognathic surgery, followed by extraction of teeth 21, 23, 24, ridge augmentation surgery, and implant supported bridge restoration of teeth 14-23.

#### **Discussion & Summary**

After treatment, harmonious facial profile and stable occlusion were established with an obvious improvement of dentofacial esthetics. The patient was satisfied with the treatment outcome, in terms of esthetics and function.

#### No. 85

Unexpected External Root Resorption of A Mandibular Second Molar during Orthodontic Treatment in An Adult

Proudchompoo Paungmalit<sup>1\*</sup>



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#### Objective

External root resorption of a mandibular second molar is one of the most found problems occurred by impacted third molar. However, sometimes, it is difficult to early detect the problem since it is not present clinically.

#### Case

In this case report, a 31-year-old female with Class I malocclusion was presented. After comprehensive orthodontic treatment including two premolars extraction, it was found that there was external root resorption of left mandibular second molar adjacent to horizontally impacted third molar radiographically. To correct the complication, limited orthodontic treatment was subsequently performed including extraction of the left mandibular second molar and uprighting and protraction of the third molar to close the extraction space. At the end of limited orthodontic treatment, the third molar was in good position and

#### condition.

#### **Discussion and Summary**

Impaction of completely formed third molars can cause external root resorption of adjacent second molars. Horizontally impacted third molars can be uprighted and protracted to replace a second molar by simple mechanism including lingual holding arch, bracket repositioning, Ni-Ti and stainless archwires, and power chain.

#### No. 86

## Surgical-Orthodontic Treatment of Class III Malocclusion with Severe Maxillomandibular Discrepancy

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#### Objective

Class III malocclusion with maxillomandibular discrepancy is considered to be one of the most complex and difficult orthodontic problem. Prevalence of Class III malocclusion in Chinese and Japanese populations ranges from 12 to 13%, much higher than that of Caucasians which ranges from 0.8 to 4.0%. Individuals with Class III malocclusion frequently show combinations of skeletal and dentoalveolar components, jaw deviation on the lower one-third of the face is most common.

#### Case

This case report describes the surgical-orthodontic treatment of a Class III malocclusion with severe maxillomandibular basal bone discrepancy. A female, age 17 years old, with a chief complaint of chin deviation and facial asymmetry, was diagnosed with skeletal Class III malocclusion, severe facial asymmetry and chin deviation to the right side 5 mm. After extraction of tooth #18 #28 #38 and #48, presurgical orthodontic treatment was done for dental de-compensation and preparation of the osteotomy site for surgical expansion of the upper arch. Three-pieces Le Fort I for maxilla and BSSO for mandible were performed to correct skeletal deformities. Stable occlusion and improvement of facial esthetics were achieved after treatment and maintained in the retention period of 1 years and 7 months.

#### **Discussion & Summary**

These results indicate that orthodontic treatment is an effective option in treating Class III facial asymmetry with skeletal and dentoaloveolar components. 3D CBCT imaging, as a diagnostic tool to assess hard and soft tissue morphology, has the potential to allow rational clinical decision making for surgical-orthodontic patients.



