News & Trends in Orthodontics

A Journal of Interdisciplinary Treatment for Orthodontists

NTO 19 July 1, 2010

2010 1st USC's Comprehensive Implant and Esthetic Dentistry Course in Taipei
Front row (from left to right): Dr. Ali Zadeh, Dr. Homa Zadeh, Dr. Fernando Rojas-Vizcaya, Dr. Chris Chang

2010 熱愛學矯正

張慧男 博士

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美國齒顎矯正專科醫師學院院士（ABO）
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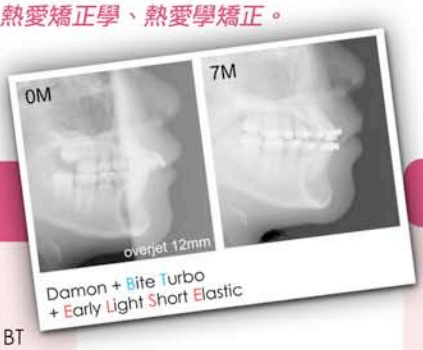
學會開始做矯正需多久?

39小時讓您入門矯正。本課程採高效學習法及高效矯正簡報法 - Keynote，在舒適、輕鬆的環境下，學會簡單有效的矯正方法，教室與診間結合，讓您現學現用，立即熟悉各種習得的技巧，而不需太多課後複習。全程以 In-Office Training 方式，用病例帶動分析、診斷，治療計畫與療程技巧，每一步驟皆以圖片及影片教學，讓您很難錯失任何環節，更沒有聽不清楚或無法理解的可能。為提高課後自我學習及臨床印證之效率，另備有教學電子檔，供學員家中研習。我們的終極目標是：用最短時間、最輕鬆的方式，讓每位學員 - *熱愛矯正學、熱愛學矯正。*

Damon + .014 Cu NiTi



Damon + Bite Turbo
+ Early Light Short Elastic

Damon矯正課程

將使用最新一代矯正器 Damon Q 進行課程，歡迎舊生報名參加。

	台中 (二)	高雄 (四)	LECTURE	LAB
1	09/28/10'	09/23/10'	理想入門病例 + Damon Q 黏著	Bonding (Damon Q) + BT
2	10/05	10/07	快速矯正療程四部曲	Ceph + Photo
3	10/19	10/28	簡捷有效的錨定系統	Damon + OrthoBoneScrew I
4	10/26	11/04	不拔牙與拔牙分析	Damon + OrthoBoneScrew II
5	11/02	11/25	Damon 診斷流程及微調	Finish Bending
6	11/23	12/02	完工檢測及報告示範	Fixed Retainer (FR)
7	11/30	12/30	維持及復發；病例示範	Presentation Demo
8	12/21	01/06/11'	矯正力學及診斷分析 (1)	DDX + Case Reports I
9	12/28	01/20	軟硬組織及診斷分析 (2)	DDX + Case Reports II
10	01/04/11'	02/10	兒童矯正及診斷分析 (3)	DDX + Case Reports III
11	01/11	02/17	成人矯正及診斷分析 (4)	DDX + Case Reports IV

矯正植體課程

矯正植體的操作時機、植法與實習、個案討論、臨床跟診及實作示範。

新竹(五) 9/17/10'

International workshop

Keynote & managment
OrthoBoneScrew
& Damon

8/14~16/10'
12/7~9/10'

助理訓練課程

每梯次共兩堂課程與技術操作，內含照相技術、Morph 與公關衛教之電腦資料處理；另安排一次診所見習。

新竹(五) 10/8、15/10'

矯正進階課程

以病例討論為主軸，培養學員如何正確診斷及快速排除臨床疑點，課程中亦訓練每位學員善用 Keynote。

	新竹 (四)	Paper reviews	Topics & Case Demo
1	09/30/10'	Bracket placement & workshop	Crowding: Ext. vs. Non-ext.
2	10/14	Impacted canines	(U) Impacted Teeth: Ant. vs. Post.
3	10/21	Canine Substitution	(L) Impacted Teeth: Ant. vs. Post.
4	11/11	Anterior Esthetics	Missing: Ant. vs. Post.
5	12/23	Excellence in Finishing (occlusion)	Crossbite: Ant. vs. Post.
6	02/24/11'	Excellence in Finishing (esthetics & perio)	Deep Bite vs. Open Bite
7	03/17	Ortho-Perio-Restore connection	Low vs. High Angle & Gummy Smile
8	03/24	Adjunct to perio	Root Resorption & Relapse
9	04/07	Unhappy patient	Perio-Ortho
10	04/14	DI & CRE Workshop (1)	Implant-Ortho
11	04/28	DI & CRE Workshop (2)	IDT

矯正精修課程

協助每位學員了解由古典到現代之文獻，進而應用於實際病例；並藉由DI及CRE讓精緻完工（Excellent Finishing）變成易達到的目標。

精修II (二) 05/11/10' 06/22 07/13 08/17 09/14 10/12 11/16 12/14 01/18/11' 02/15 03/22

課 程 資 訊

課程項目	時段	上課地點
Damon矯正	台中/高雄 【課程】09:00 - 12:00 【實習】另外安排	【新竹】 金牛頓藝術科技公司 / 新竹市建中一路25號2F
矯正進階	【新竹】09:00 - 12:00	【台中】 文化大學台中教育推廣部 / 台中市西屯區中港路二段128之2號3樓 (RICH 19大樓)
矯正精修	【課程】09:00 - 12:00	
矯正植體 (含中、晚餐)	【課程】09:00 - 12:00 【實習】13:30 - 20:00	【高雄】 高雄國際會議中心 六合廳 / 高雄市前鎮區中山二路5號 (捷運獅甲站4號出口)
助理訓練班 (含中、晚餐)	【課程】10:00 - 14:30 【實習】15:00 - 20:00	

課程報名專線：

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Look for the best; never settle for less!

For the past 5 years our group had conducted over 30 Keynote workshops around the world. Thanks to our kind participants the responses we received were overwhelmingly positive. Not only do we conduct presentation workshops, we also search for the best presentation format and Keynote presenters.

After attending the USC implant course early this month, I had no doubt in my mind that the best Keynote master in dentistry is Dr. Fernando Rojas-Vizicaya. His teaching materials were insanely great and was presented in a well-organized and logical manner. He had demonstrated thorough knowledge and understanding of his assigned topic. The most amazing part is every slide he used is a work of art. At first, I thought this man must be a genius. But what I realized later was that, in most cases, he spends an entire weekend just to design and produce one single slide in order to let his audience better understand his concepts. I start to appreciate that peak performers are:

1. Not born - they are made.
2. Not superhuman with special talents-but average people like you and me.
3. Not workaholics - but they are committed to results, not activities.

My dear readers, if you are in the lecturing circles, I strongly suggest you to pause, watch and listen carefully to how Fernando presents his information. If you are a regular audience, please look for the best and never settle for less. With great sincerity I would like to say: ***Fernando, you are the No.1 Keynote master in the world. No one had ever come close to you***. As publisher of NTO, I am proud to present Dr. Fernando Rojas-Vizicaya as one of our NTO's consultants. It is always a great honor to learn from a real expert.

Chris HN Chang, DDS, PhD, Publisher

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Rojas-Vizcaya

Consultant
Dr. Homa Zadeh

Consultant
Dr. Kwang Bum Park

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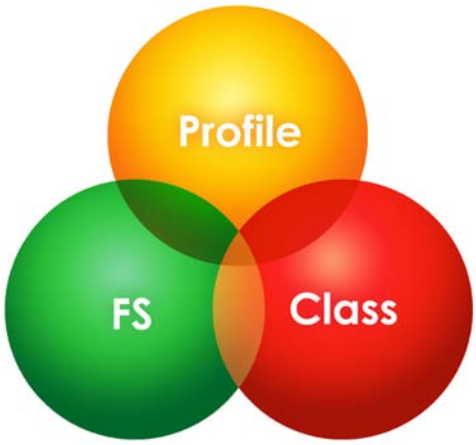
Treatment of Severe Class III Cases Demonstrating Damon's MEAW Effect



(A) A long term follow up Class III case

This diagnosis follows the author's 3-Ring Diagnosis framework[1] (11y2m: Fig. 1A, B, C, D)

(1) Profile: The patient has an orthgnathic CR profile at the beginning which indicates a better prognosis.

(2) FS: There is a functional shift, so the prognosis is better.

(3) Occlusion: Both occlusions are in a Cl III relationship with the right side much more pronounced than the left side, and the lower midline deviates to the left. The patient's main concerns were severe anterior crossbite and a labially blocked-out right upper canine. It's quite unusual that the lower dental midline deviates to the left while the chin point deviates to the right.

The treatment began with using an inclined bite plane on the lower anterior teeth for bonding the upper dentition. When IBP was instructed, posterior open bite was temporarily created. As a result, the patient had difficulty in chewing. In addition, the lower anterior teeth cannot be bonded. So it's difficult to have anteroposterior correction of the Cl III relationship at the first IBP stage. (11y4m: Fig. 2)

After around 7 months of initial alignment, the right upper canine was aligned. The occlusion still maintained severe Cl III on the right side and less severe Cl III on the left side. Note the generalized gingival swelling due to poor oral hygiene. (11y11m: Fig. 3).

Due to the patient's poor oral hygiene, insufficient adherence to wearing Cl III elastics, the effect of Cl III correction was limited. All the brackets were temporarily removed. The author suggested the patient to stay in follow up until she reached 18 when most of the active growth stopped. Re-evaluation and retreatment could then be initiated. (12y4m: Fig. 4A, B, C)

Dr. John Jin-Jong Lin
MS, Marquette University
Consultant of NTO
President of TAO (2000~2002)
Author of *Creative Orthodontics*

Fig. 1A: 11y2m.
Frontal and open smile views of the patient.

Fig. 1B: 11y2m.
The patient has an orthognathic CR profile.

Fig. 2: 11y4m.
Inclined bite plane was used for disocclusion and made the bonding of upper dentition possible.

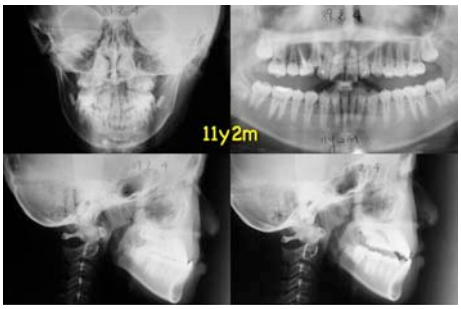


Fig. 1C: 11y2m.
Panorex showed an impacted right upper canine. The CR cephalogram showed an orthognathic profile.

Fig. 1D: 11y2m.
Class III malocclusion with right upper canine labially block-out.

Fig. 3: 11y11m.
Gingival swelling due to poor oral hygiene. Class III malocclusion was difficult to be corrected in this traditional edgewise system by only Class III elastics.

Fig. 4A: 12y4m.
Post initial alignment and debonding frontal and open smile views with chin still slightly deviating to the right side.

Fig. 4B: 12y4m.
After initial treatment, the patient still maintains an orthognathic profile.

Fig. 4C: 12y4m.
Initial debonding, indicating Class III malocclusion with edge to edge bite and gingival inflammation. Lower dental midline still deviates to left, which is opposite to the chin point's deviation.

Fig. 5A: 24y9m.
Frontal and open smile view showed the chin deviating to the right side.

Fig. 5B: 24y9m.
The patient still has an orthognathic CR profile.

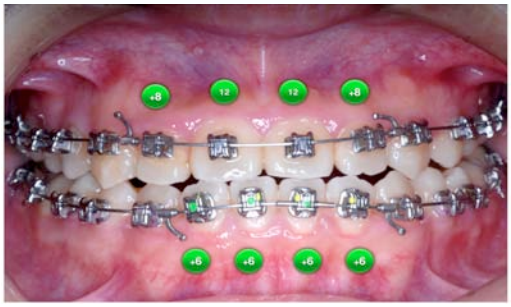


Fig. 6: Place the lower low torque anterior brackets upside down. Make them as high torque brackets as possible to prevent lingual dumping of lower anteriors while retracting with Class III elastics.

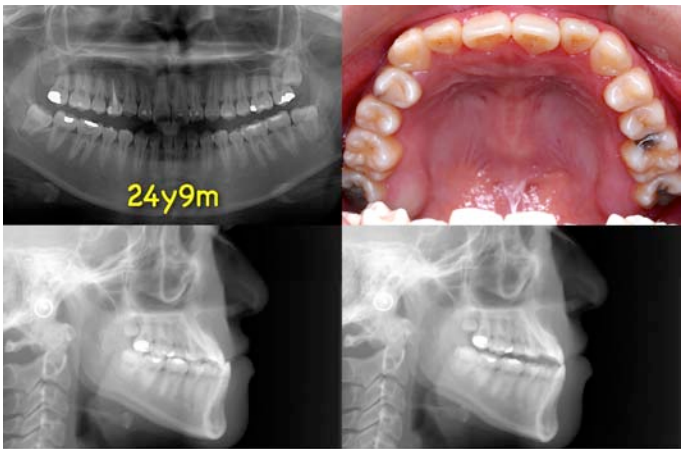


Fig. 5C: 24y9m.
CR cephalogram showed an orthognathic profile.

Fig. 5D: 24y9m.
Severe Class III malocclusion. The lower dental midline still deviates to the left side.

24y9m: (Fig. 5A, B, C, D)

The patient returned to seek treatment again. She still had an orthognathic CR profile and maintained significant a Cl III relationships on both buccal occlusions. This time Damon 3MX® brackets were available for use. Low torque brackets were placed upside down on the lower anteriors to have +6 high torque on the lower anteriors for better retraction without dumping of the lower incisors lingually. (Fig. 6)

26y10m: (Fig. 7A, B, C)

After 2 years and 1 month of treatment with Damon 3MX® series and retraction by Cl III elastics, the Cl III malocclusion was efficiently corrected to Cl I with enough overbite and relatively bigger overjet due to the Damon's MEAW effect. Hopefully this overcorrection can offset further relapse. After 7 months in follow up, the overjet became smaller, overbite a little bit shallower but still maintains Cl I occlusion (Fig. 8)

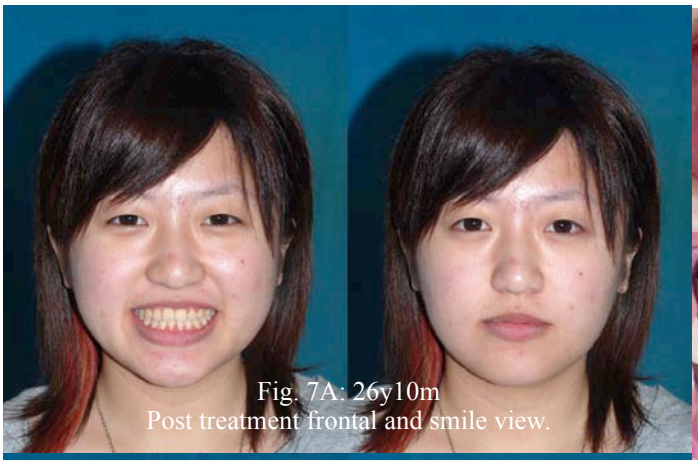


Fig. 7A: 26y10m
Post treatment frontal and smile view.

Fig. 7C: 26y10m
Post treatment Class I malocclusion with enough overbite and overjet.

Fig. 7B: 26y10m
Post treatment orthognathic profile.

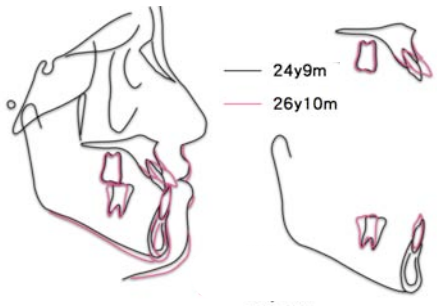


Fig. 7D: 24y9m vs. 26y10m
Even though the lower dentition successfully tipped back and Class III relationship corrected to Class I, the upper incisors flared forward too much due to a lack of proper torque control on the upper incisors.

26y10m vs. 27y5m: (Fig. 8)

After 7 months in follow up, the overjet became smaller, but still maintained enough overbite and overjet.

Fig. 8: 26y10m vs. 27y5m
After 7 months in post treatment follow up, the overbite and overjet became shallower, but the patient remains in Class I occlusion.

Summary (Fig. 9A, B)

Fig. 9A: Summary of follow up and treatment changes.

Fig. 9B: Summary of follow up and treatment changes.

What can we learn from this case?

1. Using anterior bite turbos as an efficient method of disocclusion to enhance correction of anterior crossbite

The author used to apply the inclined bite plane (Fig. 2) to correct anterior crossbite. Lately the author prefers to use the anterior or posterior bite turbos. The advantages of anterior bite turbos are as follows: (Table 1)

(1) Bonding the lower anterior teeth at once is needed in most of the situations. Using inclined plane cannot bond the lower anteriors and bonding has to be delayed which will delay the treatment effects. Using posterior bite turbos (Fig. 10) or anterior bite turbos (Fig. 11) make it possible to bond the lower anterior teeth in the beginning.

(2) Free contact in the posterior teeth, in combination with light short Cl III elastics, can correct over-closure easily. Although there's no posterior occlusal contacts temporarily, the patient can still eat with front teeth. After a short period of time, the posterior teeth will settle quickly by using short Cl III elastics.

2. The Damon system has a useful MEAW effect to correct anterior crossbite

For traditional edgewise, one of the best ways to correct anterior crossbite is using Dr. Young Kim's MEAW technique (Multiloop Edgewise Arch Wire) [3]. Now with the light force provided by the efficient passive self-ligating Damon system, amazingly without using complicated loops, simply using Cl III elastics, the Cl III malocclusion can be corrected easily by the straight wire system [1, 2]. Damon's

Fig. 10
Using posterior bite turbos, made of glass Ionomer cement, on the occlusal surface of the upper first molars, makes it possible to bond both the upper and lower dentition in the beginning of the treatment.

Fig. 11
Lower anterior bite turbos made of composite over the lingual side of lower incisors makes the bonding of both upper and lower dentitions possible. The use of light short elastics can facilitate extrusion of the posterior teeth and correct posterior open bite and Class III relationship. (Courtesy of Dr. Ponchai)

Fig. 12
The patient had lip incompetence and protruded upper incisors at first. After using short Class III elastics, the upper incisors proclined more and he became a bimaxillary protrusion. The buccal shelf mini-screw would have been a far better choice of treatment than Class III elastics. (Courtesy of Dr. Ponchai)

	Inclined Bite Plane	Posterior Bite Turbo	Anterior Bite Turbo
Abbreviation	IBP	PBT	ABT
Posterior chewing	Difficult	Some occlusal contact	Difficult
Correction of over-closure	Free eruption of posterior teeth	More difficult to correct	Free eruption of posterior teeth, or closed by elastics
Bonding of anterior teeth	negative	positive	positive

Table 1: Comparison of disocclusion methods for correction of anterior crossbite.

amazing MEAW effect, makes it a very efficient way to treat Cl III cases (Fig. 1~9, 13). In these two cases the posterior molars were all tipped back and Cl III was corrected to Cl I in this Damon system without using complicated loops.

3. Avoid early extraction treatment in treating Class III malocclusion

When using traditional edgewise appliance, it's very difficult to correct Cl III malocclusion without extraction. Extraction of lower premolars or molars are commonly needed. Nowadays the combined use of the Damon self-ligating bracket system and buccal shelf mini-screw makes it possible to treat patients of this kind without extraction [4]. It was quite lucky the author did not do extraction treatment when the patient (Fig. 1~9) was in active growth. Otherwise the lower incisor torque will be difficult to control while correcting anterior crossbite. Hence, for growing Cl III patients, since it's quite difficult to treat during growth, it's better avoid early extraction treatment. Instead, one should wait until the active growth period is over and re-evaluate the treatment plan. With the current advanced techniques, nonextraction treatment is possible in most of the Cl III cases, unless it's a severe crowding case.

4. Proper use of various torque prescription in the Damon system, can get the best treatment result in Class III correction

When using Cl III elastics, one should be careful about the flaring effect on the upper incisors. In this case the patient's original nasolabial angle is not too acute. Despite the Cl III retraction which resulted in upper incisors proclining forward (Fig. 7D), the upper lip is still acceptable. For Cl III patients with relative protrusive upper lips and lip incompetence at the beginning, the early light short Cl III elastics will make the upper and lower lip both protrusive. This will turn the original Cl III nonextraction case to a Cl III extraction case (probably four bicuspids extraction will be indicated) (Fig. 12). The alternative to Cl III elastics, in

this type of cases, might be using the buccal shelf bone screws to retract the lower anterior teeth[4].

Luckily in this patient the high torque lower incisor bracket were used. After retraction there is no lingual dumping of lower anterior teeth. Unfortunately only standard upper incisor brackets were used in this case (Fig. 6). The long Cl III elastics (from the upper first molar hook to hook between the upper lateral incisor and canine) made the upper incisors flared forward significantly (Fig. 7D). Although the patient was very satisfied with the treatment result, the cephalometric superimposition clearly indicated severe flare out of the upper incisors. If the author have the chance to retreat this patient, he would turn the D3MX® brackets upside down as instructed in Tom Pitts' method [2], which explains, in order to avoid flaring of upper incisors, the upside down use of standard Damon 3MX® brackets can turn the central to -12, the lateral to -8 super low torque. This will prevent the upper incisors from flaring forward too much. (Fig. 13A: placing incisor brackets upside down can to turn the upper incisor brackets to super low torque

Fig. 13A

Fig. 13B: Comparison of before and after treatment.

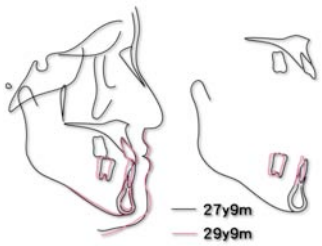


Fig. 13D

Fig. 13C: With Damon's MEAW effect, even with the presence of lower 3rd molars, the Class III elastics can still be used to correct a severe Class III relationship.

brackets, and high torque lower brackets.) (Fig. 13B) (Fig. 13C) (Fig. 13D: Excellent torque control on the upper arch with upside down standard D3MX® brackets in order to get super low torque, which prevents upper incisor from flaring forward.). Now for the Damon Q series, there is low torque prescription for upper central incisors, so there is no need to turn the brackets upside down anymore [5].

5. Light short Class III elastics is enough to correct Class III malocclusion in the Damon system

The author used to apply long Cl III elastics, from upper first molar hook to the hook between lower lateral incisor and canine. The author has observed Dr. Etsuko Kondo [6] and Dr. Tom Pitts' efficient use of light short Cl III

elastics [2] which can correct Cl III more effiently with less side effect (Fig. 14A, B). Such use can also avoid upper molar extrusion and excessive upper incisor flaring. Nowadays the author routinely uses light short Cl III elastics in ways similar to Dr. Ponchai's cases.

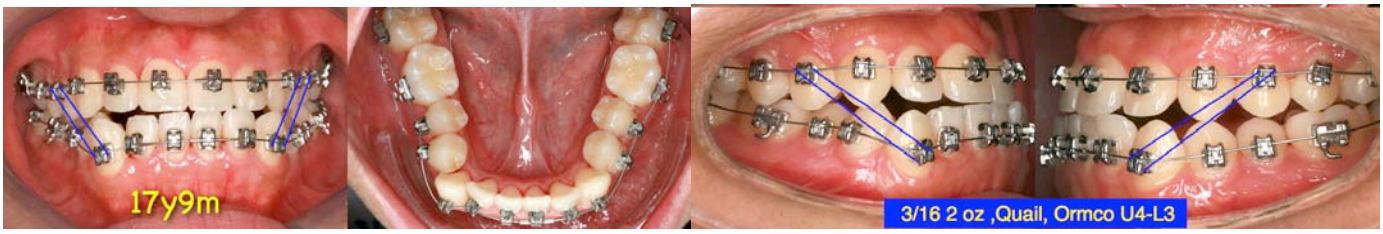


Fig. 14A (Courtesy of Dr. Ponchai)

Fig. 14B (Courtesy of Dr. Ponchai)

Special thanks to:

1. Dr. Ponchai Charuscharoenwittaya's generous sharing of the cases (Fig. 11, 12, 14A, 14B).
2. Dr. Yu-Cheng Liaw's detailed chaphalometric tracings of the presented cases.
3. Tzu-Han Huang's English editing.

References

1. Lin JJ. Creative Orthodontics, Blending the Damon System & TADs to Manage Difficult Malocclusions, 1st Edition. Yong Chieh Ltd, 2007.
2. Lin JJ. Creative Orthodontics, Blending the Damon System & TADs to Manage Difficult Malocclusions, 2nd Edition. Yong Chieh Ltd, 2010.
3. Kim YH. Anterior openbite and its treatment with multiloop edgewise archwire. Angle Orthod 1987;57:290-321.
4. Lin JJ. Treatment of Severe Class III with Buccal Shelf Mini-Screws. News & Trends in Orthodontics 2010 Apr;Vol. 18:10-13.
5. Damon Q brochure – Break Through. No. 070-5378 Rev A. Ormco Sybron Dental Specialties.
6. Kondo E. Muscle Wins! Treatment in Clinical Orthodontics. DaehanNarae Publishing, Inc., 2008.

World Trend in Anchorage Development

2nd World & 9th Asian Implant Orthodontic Conference

Taipei Taiwan.

Dec. 10th ~12th, 2010

Please download the registration form from http://www.wioc2010.org.tw

Registration Fee

Category	WIOC (Dec. 10-12, 2010)	
Registration Time	Before August 31	After September 1
Doctors	USD250	USD300
Students	USD100	USD120

Gala dinner (Dec. 11, 2010) : USD50

Student registration should have a letter of certificate from the chairperson of the orthodontic department

THEME

World Trends in Anchorage Developments — TADs

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Taipei International Convention Center, Taipei,Taiwan

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台北醫學大學齒顎矯正研究所臨床教授

[自鎖矯正器的選擇]

早期傳統矯正受限於矯正托槽之設計，技術上較困難且難學，目前由於直接式托槽 (straight wire appliances) 及最近蓬勃發展出來的自鎖矯正器之問市，使得齒列矯正之門檻大為降低，但診斷及治療計劃仍是不可忽略之最重要基礎。此次演講將比較各類自鎖矯正器之優缺點，並進一步探討自鎖矯正器相關之文獻，建立對於自鎖矯正器應有的正確觀念。

[拔牙與不拔牙的思考]

早期矯正治療中，最困擾的支抗喪失 (anchorage loss) 亦因為近年來矯正植體之臨床應用，使得矯正治療比傳統的容易掌控，也打破了傳統矯正之拔牙矯正定義，此系列演講將完整徹底的探討於擁有最新矯正利器的今天，如何做最新拔牙或不拔牙之最佳治療計畫。分享近幾年來享受到器材進步所發展出之自鎖矯正系統，所帶來的治療上的便利，如何充份應用在日常所遇到之困難症例。

[處理智慧齒的智慧]

國內蛀牙率偏高，不理想的臼齒情況相當常見，如何善用智齒，做出對病人最好的治療計畫，有無利用矯正治療減輕病患飽受手術拔智齒之痛苦，甚至避免因拔除智齒而造成第二大臼齒牙周問題之困擾。

講師 | 內容簡介
Speaker & Lecture Introduction

張慧男 醫師

新竹貝多芬齒顎矯正中心負責人

美國印第安那普渡大學齒顎矯正研究所博士

美國齒顎矯正專科醫師國家考試認證(ABO)

如何發揮 Damon Q 的療效

DamonQ 為矯正史上投入最多研發經費，也是市面上最昂貴的矯正器，如此昂貴，為何還造成上市後供不應求呢？原因可能是：非但最貴，也可能是史上最舒適，且最有效率的矯正系統。如何有效率的使用新的矯正利器 **DamonQ** 呢？**DamonQ** 除了外型的舒適設計能讓病患更舒適外，對矯正醫師的臨床操作也更為輕鬆方便。但最大的特色是內建的 **Torque**，做了大幅度的增與減，原因是為了配合黏著的位置。經三年的討論，**Damon System** 決定採取 **Tom Pitts** 的黏著位置：即較接近牙齦部，較接近 **Center of Resistance**，此位置可大大的增加牙齒移動的控制，及更易達成精緻完工 **(Excellent Finishing)**。本次演講的目的主要是分析 **Torque** 的簡易選擇及精確的黏著位置，以達成 **Damon Q** 的極致效率與高品質的矯正治療過程。

CREAtive ORTHOdontic FORmula

林錦榮｜張慧男

享譽國際二位重量級矯正宗師 2010年代表作

Oct 31 2010

演講資訊 Lecture Information

Organizer 臺灣楓城牙友學會<台大牙醫校友會>

Co-Organizer 湧傑企業股份有限公司

Host 廖炯琳 醫師

Speaker 林錦榮｜張慧男 醫師

Topic Creative Orthodontic Formula

Time 2010.10.31 周日 9:00 - 17:00

Venue 台灣金融研訓院菁業堂 - 台北市羅斯福路三段 62 號 (捷運台電大樓站4號出口步行3分鐘)

Lecture Fee 2010.10.15 前 會員1000元，非會員1500元，學生500元

2010.10.15 後 會員1800元，非會員2500元，學生900元

Certification 參加者給予網路登入繼續教育學分

Registration 請先電話報名 (02)27788315 分機 122 Ms楊、分機 121 Ms李

請於三日內完成劃撥費用，郵政劃撥帳號17471807

Remark 戶名：湧傑企業(股)公司，備註欄註明「2010.10.31演講」

活動備茶點及午餐，報名未出席者，恕不退還既收款項

演講時刻表 Schedule

0830 - 0900	Registration
0900 - 1030	自鎖矯正器的選擇
1030 - 1100	Coffee break
1100 - 1230	Torque Selection and Excellent Finishing
1230 - 1330	Lunch
1330 - 1500	拔牙與不拔牙的思考
1500 - 1530	Coffee break
1530 - 1630	處理智慧齒的智慧
1630 - 1700	Panel Discussion

The Key Elements of a Quality Orthodontic Practice

Charlene White

What are the Key Elements to a Top Quality Orthodontic Practice?

Continuing education

Fortunately, I have had an opportunity to work with over 700 orthodontists since 1983. It has been a pleasure and an honor to observe many of these practices become what I call a "Peak Performance" practice. When Dr. Chang asked to write an article on the "Key Elements of a Top Quality Orthodontic Practice", I immediately thought about the many doctors and team members I have met over the years. A pattern was evident among the highly respected practices. In this article I will summarize the 15 key elements that define these practices.

❶ CONTINUING EDUCATION

To create a top quality practice means you must continue your education. This includes both the doctor and the team. Continuing education is fundamental to creating a quality practice. There are many options available: journals, newsletters, the internet, webinars, seminars, conventions, and study clubs just to name a few. Posting of the certificates and listing of the courses taken by the doctor and team is both appropriate and impressive to patients. This information should be displayed in your office and on your website. With current technology, it is easy to purchase DVD's and CD's of courses from around the world. When I observed the changing clement of staff going to courses, I shifted to interactive webinars. The entire team can enjoy and learn together in the comfort of your office.

Having presented over 200 courses and workshops in eight countries, I have learned that the cream of the crop invest in continuing education.

Charlene White

President, Progress Concepts
Orthodontic Consulting Firm
B.S. in Hygiene, Old Dominion University

Key Idea:

Post the courses taken by the doctor and staff in your office, your website and on your phone message each year. Make presenting an educational 15 minute talk to the team a requirement each year as part of your evaluation.

Key Idea:

No matter what your leadership role is in life, pick one top trait that people are looking for in an excellent leader. The author of the book "Credibility" learned through thousands of surveys, the four top qualities people want in a leader are: inspiration, honesty, vision, or competence.

❷ LEADERSHIP

Everything filters down from the top. The leader(s) of the practice set the standards and communicate the vision of the practice. In order to project and uphold a quality image, the leader must be committed to quality. They do not sacrifice quality to do it cheaper, quicker, or easier. They set an example that is steadfast and unwavering. The purpose and vision is clear to the team. Leadership is a learned skill. It takes focus and discipline to become an effective leader. Excellent leaders lead through example. They truly care about their team members. They have developed the skill of being firm and compassionate which is a delicate balance. Excellent leaders have the respect of their team members and of others in the community.

I served on the Board of the AAOF for six years which gave me some insight into the time and effort that goes into the leadership of the doctors who dedicate their time to the AAO. In addition I have also worked with many Head of Departments of Universities who have sacrificed income for passion for the path they have chosen. I have also worked with many orthodontists, managers, Clinical Coordinators mothers and fathers who were excellent leaders. Their efforts bring quality results.

❸ TEAM BUILDING

A quality orthodontic practice only earns that reputation by having a top notch team. They understand that every person on the team plays a role in creating a quality experience for the patient. A top notch team member contributes more than the average person and they earn more than the average person. They are willing to study to elevate their skills. They perform their job well and display an excellent attitude. They are proud to promote their doctor and team. A win/win formula is in place where the doctor, the team and the patient all feel well cared for in the environment.

In my consulting career, I have personally interviewed over 4,200 team members. The vast majority are moms, wives, single females who are hard working predominately women

who are dedicated to orthodontics. They come to work with a positive attitude no matter what they are dealing with at home. My hat is off to these team members who help create beautiful smiles everyday.

Key Idea:

Plan at least one team building event each year. One of my favorites is a ROPES COURSE. Check out the one that is closest to you. Individually commit to doing one thing each day to go the extra mile to do something for someone on your team.

❹ CUTTING EDGE IMAGE

Image brings patients to the door and quality keeps them there. A top quality practice has an excellent image. The doctor(s) reinvests in the practice every year. One year it may be a digital x-ray machine and the next year it may be going paperless. Every 5-7 years the decor must be updated. Everything from the parking lot, front door, reception area, coffee area, bathroom, clinic, games, music, lighting, and the consult rooms must be top notch. Flat screen slide shows must replace bulletin boards. Have Signature Pads instead of piles of paper. These are all important to building the "WOW" factor.

It is so much fun to walk into a new start up office that created the "WOW" factor on a dime and in addition has found a way to put the new digital x-ray into their budget. Successful Orthodontists are notorious for creating an excellent image.

Key Idea:

Focus on one or two areas this year to improve your image. If you are getting compliments on a regular basis in any area, you have arrived. If you are not getting compliments for example on your scrubs, it is time to kick it up a notch. Choose an area and brain storm together. It could be the landscaping, the front door, your website or the lighting in your office.

❺ COMPUTER UTILIZATION

A quality practice knows how to use technology to their advantage. The doctor is not afraid to invest in the latest and best software and hardware to get the job done efficiently. They attend their software user meetings or they have a trainer in each year to make sure they are optimizing their usage of the software. They work with a hardware support company who helps them maintain and update their hardware. Their website reflects the image of their practice. The sites are not "under construction", they are completed. They attend meetings and spend time on the exhibit floor to make sure they are in tune to the latest available. They are always looking for an easier way to get the job done.

Key Idea:

If you have not explored putting a detailed treatment plan in the patient's chart via the software, get started today. The clinical team is truly empowered by having a treatment plan that guides them step by step through the treatment. It takes an investment of time to set it up, but it is well worth the process.

❻ EFFICIENT SYSTEMS

Top quality practices hear all the time from patients, "You run such an organized practice. I wish more businesses were run like yours." I am proud to report that the peak performance practices that I have coached over the years hear this often. It is rewarding for me to return to a practice that has all of the systems we've been working on over the years in place. It is running like a well oiled machine. Scheduling, recall, new patient process, telephone scripting, clinical systems, bookkeeping , accounts receivables, insurance , marketing and personnel management are all functioning at a high level.

Key Idea:

Scheduling an in-office consultation periodically is a sure way to know that you are on top of your systems. It's like working with a personal trainer. There is nothing like having an excellent check up to assure that you are on the right track in every area of your practice.

❼ CLINICAL EFFICIENCY

There is nothing better for practice building than happy patients telling others about their orthodontic result and their experience in your office. A top quality team runs on schedule, the have 3% or less repairs, they are proud to show their final records a the study club meeting, decalcification is minimal, less than 10% of their patients are past their target date, their collections per visit is higher than average $300+, they perform the procedures in the allotted time and the patients feel well informed. All of these results do not just happen. It starts with an excellent well written treatment plan on the patient record that encompasses all of the treatment goals and the plan to get there. Systems must be followed to reduce repairs and run on schedule. The doctor also is willing to invest in top quality clinical supplies. Photographs are taken routinely to document the case and also used to educate the patient.

Key Idea:

Are you proud to show off your before and after smiling photos? Well, get to work and display them on slide show throughout the office. Patients do not like to see intra-orals of anyone but themselves. They like to see attractive smiling faces of patients who have an attractive smile arch and full smiles. Do a collage as a screen saver.

❽ RELAXED FUN ATMOSPHERE

A top quality practice also has a fun and relaxed atmosphere. They have worked hard to make it look easy. The patients enjoy coming to the office therefore; they do not have many no-shows. People are laughing and having engaging conversations. Kids run in the door and go to their favorite "spot". The front desk staff recognizes you, smiles and chit chats. Cookies and coffee are available. Mom can sit and enjoy the latest magazines or dad can watch the close caption TV. Wii, Xbox, Disney movies are available. There is something for every age group. The team wears matching outfits that look crisp and current. Does the top quality practice encounter problems? Of course they do everyday. The difference is they come up with quick solutions and move on to their tasks at hand. They do not look back. They are moving forward.

Key Idea:

Brainstorm together as a team. What is one excellent idea you can implement in the next 30 days that will add to your fun atmosphere? Have a beach week for the month of June. Add a Nerf ball hoop in the clinic so kids can throw to win a prize. Have a wheel that you spin if you have good hygiene to win a prize. People love to get involved.

❾ MARKETING

It is not smart to bank on "If I deliver quality treatment, I should not have to market my practice". Having a strategic marketing plan in place is the key to the success of any practice. Number one is location. No marketing plan can overcome a poor location. Quality practices do their homework. They understand the importance of demographics and how to stay ahead of the competition. Competition is not necessarily another Orthodontist. It can be discretionary dollars in the family budget. They do not just sit back and hope someone will call. They are proactive in the office, the community and in their planning.

Key Idea:

For 25 years I had a small 50 page marketing book that was not in high demand. When the recession started to hit, I got to work on a marketing tool kit of 500 pages for the orthodontic team. You need a plan, ideas, direction, a formula for success and a handbook for the marketing coordinator. Our new Marketing Tool Kit has been a big hit with the marketing coordinators. It makes their job easier and it works. I have also been coaching several offices these past two year and their new patient numbers are up in a down economy. A quality office knows and understands that as the external factors change, the internal action plan must change also.

❿ THEY GIVE BACK TO THE COMMUNITY

Successful orthodontic practices thrive off of the community where they are located. The quality practices enjoy

giving back to the people in their community. Whether it is a scholarship program, habitat for humanity, walk a thon, sports support or a scout troop tour, the team is excited to be involved in community events. I have witnessed many clients and team members over the years dedicate hours and money to supporting their community.

Key Idea:

Set up a budget for donations for the year. Put someone in charge of the budget. When requests come in, send them to that person. Give them an application and let the person know you will put them in for approval this year or maybe next year if the budget is depleted. Put photos of all community events you support on your website. Always look for ways to bring people back to your office for a pizza party at the end of the event.

⓫ GIVING BACK TO THEIR SPECIALTY OR ASSOCIATION

There are lots of ways to give back to your specialty. Being an active member of your association, donation to your university, being a part time professor or holding office in your association. Quality oriented orthodontists give back time and money to their specialty. That means missing nights or weekends at home with their family at times. Staff can participate in local associations. You can mentor young people who may be interested in dentistry as a career.

Key Idea:

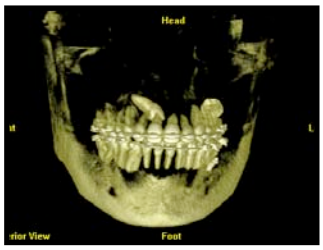
Design your code of conduct for your team and strive to follow it each day.

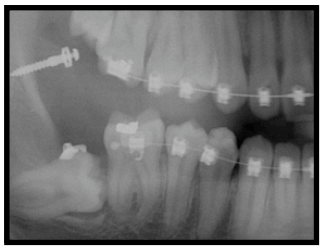
⓬ THEY HAVE A PIONEER SPIRIT

A pioneer trusts their instincts and is willing to go out on a limb to try new technology. They move ahead of the "pack". If everyone sat back and waited, nothing would happen. If no one had the guts to question the status quo, the profession would not move forward. Laser treatment, tads, cone beam x-ray, clear aligners and self ligated brackets are all in the fore front today. Staff that works in a pioneer spirited office, cannot afford to have the attitude of "why do we need to change". Things are moving at light speed. Do not get left behind.

Key Idea:

Sponsoring a booth on career day at local schools can bring great returns. You can also invite young patients to be an assistant for a day in your office. This type of program has inspired many young people to go into dentistry.





⓭ KEEPING IT ALL IN BALANCE

Many orthodontists will tell you that they became an orthodontist because they admired the orthodontist life style. Their goal was to have a successful practice, a balanced life and a happy home life. They wanted to be part of their children's lives. I see more and more that the young orthodontists want to

work at maximum efficiency to create a quality life in their practice and at home. They want to be at the ball games and the school events. They want their kids to remember mom and dad being there to support them. I have some clients who worked 12 days a month when their kids were younger, who are now working more days a month because the kids are off to college and require less time. As I have said for years, the beauty is, "Design is the way you want it."

Key Idea:

You can Google the latest and newest concepts on the market in dentistry. Talk about it at your next staff meeting.

⓮ LIVING BY A CODE OF CONDUCT

It is like a Marine, the top quality performers live by a code of conduct. The team knows the key rules and the consequences for breaking them. You do not hire a staff member from a top referring doctor without consequences. You do not get lack on documenting charts or developing a treatment plan without consequences. You cannot get lazy with you marketing without consequences. You cannot neglect your health without consequences. You do not allow the rude staff member to stay on the team without consequences.

Key Idea:

Ask yourself... what would I change if I designed it the way I wanted it? Do not wait. Life is too short. I have helped many doctors redesign their template, produce more and work fewer days or hours

⓯ EMPLOY EXCELLENT ADVISORS

It takes a lot of focus and talent to become a top quality orthodontist. No one can be all things to all people. Orthodontist's who know how to manage their time to fullest, know they can get where they want to go much faster if they employ skilled advisors in other areas of their life. They go to the experts in their field before making an important decision. The top 20% of profitable orthodontists use consulting services. The results are printed in surveys every year. A skilled practice management consultant, tax consultant, investment advisor, accountant, or lawyers etc. play a major role in the success of a practice. The following are actual statistics from practices that have benefited from my consulting services. These are truly "Peak Performance" practices.

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系列二: 矯正療程四部曲	系列八: 病例示範及診斷分析 (1)
系列三: 簡潔有效的錨定系統	系列九: 軟硬組織及診斷分析 (2)
系列四: 不拔牙與拔牙分析	系列十: 兒童矯正及診斷分析 (3)
系列五: Damon 診斷流程及微調	系列十一: 成人矯正及診斷分析 (4)
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ABO Case Report

Class II Low Angle Adult Case with a Talon Cusp

HISTORY AND ETIOLOGY

A 26-year-and-2-month-old female was referred by her general dentist to evaluate a chief complaint: "crooked, unattractive teeth" (Figure 1-3). The patient was in good general health and eager to receive the treatment prescribed (Figures 4-6). The clinical course is documented by comparing the pre-treatment cephalometric and panoramic radiographs to the corresponding post-treatment images in Figure 7 and 8, respectively. Figure 9, the superimposed pre- and post-treatment cephalometric tracings, documents the dental and skeletal changes. The etiology of the malocclusion appears to be genetic, because talon cusp, dental crowding and a prognathic tendency may be related to signs of a syndrome[1]. The developmental aspects of talon cusp are unknown, but it may be a manifestation of dens evangenitis or reflect fusion of an incisor with a supernumerary tooth[2].

DIAGNOSIS

Skeletal: Class I pattern (SNA 82°, SNB 80°, ANB 2°) and a low mandibular plane angle (SN-MP 25°, FMA 19°). See Figure 7 and the Cephalometrics Table for details.

Dental: Bilateral Class II canine and end-on molar relationships were associated with moderate, generalized crowding in both arches. The overjet was 5 mm and the overbite was 5 mm. A talon cusp associated with macrodontia was noted on the lingual side of upper right central incisor. (Figures 2, 3,10 and 11).

Facial: Straight profile (Figure 1).

The American Board of Orthodontics (ABO) discrepancy index (DI) was 18, as documented later in this report. The major diagnostic factors were bilateral end-on Cl II (4 points), crowding (4 points), anomalous morphology (macrodontia) of the maxillary right central incisor (two

Fig. 1 Pretreatment facial photographs

Fig. 2 Pretreatment intraoral photographs

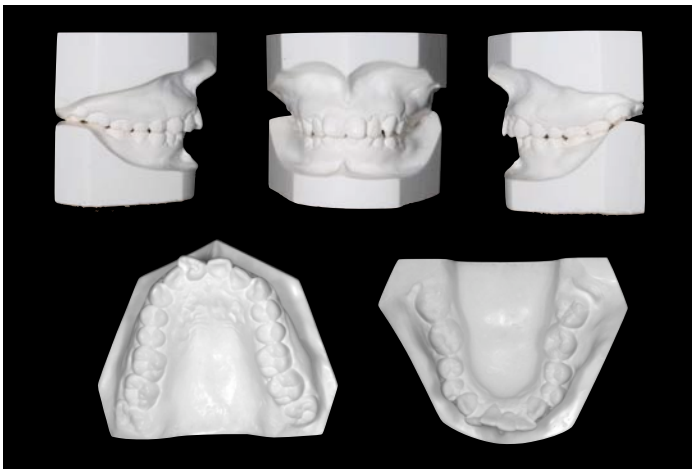
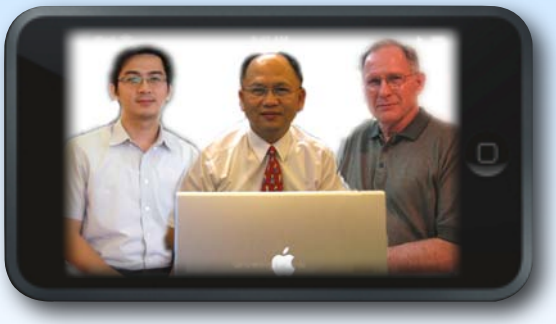


Fig. 3 Pretreatment study models



Dr. Dennis HY Hsiao, Lecturer, Beethoven Orthodontic Course (left)
Dr. Chris HN Chang, Director, Beethoven Orthodontic Center (middle)
Dr. W. Eugene Roberts, Consultant, *News and Trends in Orthodontics* (right)

Fig. 4 Posttreatment facial photographs

Fig. 5 Posttreatment intraoral photographs

Fig. 6 Posttreatment study models

points) (Figures 2 and 3), a talon cusp which increased treatment difficulty (2 points) (Figures 11).

SPECIFIC OBJECTIVES OF TREATMENT

Maxilla (all three planes):

- A - P: Maintain.
- Vertical: Maintain.
- Transverse: Maintain.

Mandible (all three planes):

- A - P: Maintain.
- Vertical: Maintain.
- Transverse: Maintain.

Maxillary Dentition

- A - P: Retract to correct Class II buccal segments and excessive overjet
- Vertical: Intrude incisors.
- Inter-molar Width: Increase.

Mandibular Dentition

- A - P: Flare mandibular incisors to compensate for excessive maxillary anterior tooth size.
- Vertical: Maintain.
- Inter-molar / Inter-canine Width: Maintain.

Facial Esthetics: Maintain.

TREATMENT PLAN

After carefully considering the alternatives, non-extraction treatment was chosen and bonded fixed appliances were selected. Bilateral lingually-tipped mandibular molars would be corrected with cross elastics. Low torque brackets and a pretorqued archwire would be used to help control excessive flaring of mandibular incisors. Anterior bite turbos and Cl II elastics would be instructed to resolve Cl II occlusion and intrude lower incisors. The size discrepancy between the upper central incisors would be corrected with pulpectomy of the upper right central incisor, followed

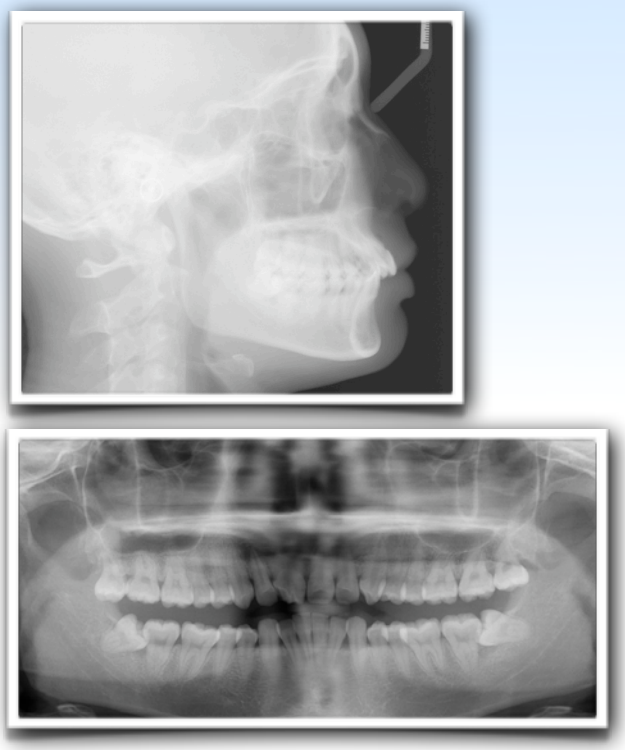


Fig. 7 Pretreatment pano and ceph radiographs

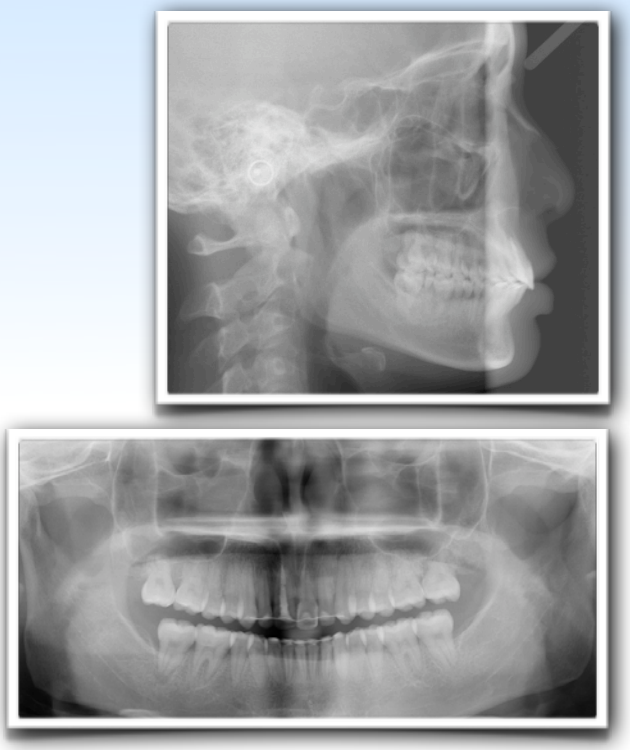


Fig. 8 Posttreatment pano and ceph radiographs

by interproximal reduction, and interproximal augmentation of the left central incisor. This esthetic correction of the maxillary anterior segment would require flaring the mandibular incisors to correct the overjet. Detailing bends with seating elastics would produce the final occlusion. Fixed appliances would be removed and the corrected dentition would be retained with an upper clear overlay retainer, and upper and lower lingual fixed retainers from 3-3.

APPLIANCES AND TREATMENT PROGRESS

0.022" Damon D3MX® brackets (Ormco Corporation) were used. Standard torque brackets (+12°) were placed on the upper incisors and low torque (-6°) brackets were placed on the lower incisors. The archwire sequence for both arches was .014 copper NiTi, .014X25 copper NiTi, .016X25 pretorqued copper NiTi, .017X25 TMA, and .019X25 SS.

After 5 months of treatment, the patient received root canal treatment on the maxillary right central incisor. The Talon cusp was then removed and the width of upper right central incisor was reduced with interproximal reduction. Anterior bite turbos were then bonded to the maxillary central incisors to accelerate the Cl II correction. Two

CEPHALOMETRIC			
SKELETAL ANALYSIS			
	PRE-TX	POST-TX	DIFF.
SNA°	82°	83°	1°
SNB°	80°	81°	1°
ANB°	2°	1°	1°
SN-MP°	25°	26°	1°
FMA°	19°	20°	1°
DENTAL ANALYSIS			
U1 TO NA mm	7 mm	5 mm	2 mm
U1 TO SN°	115°	110°	5°
L1 TO NB mm	2 mm	5 mm	3 mm
L1 TO MP°	99°	113°	14°
FACIAL ANALYSIS			
E-LINE (U)	-1 mm	0 mm	1 mm
E-LINE (L)	0 mm	0.5 mm	0.5 mm

Table. *Cephalometric summary*

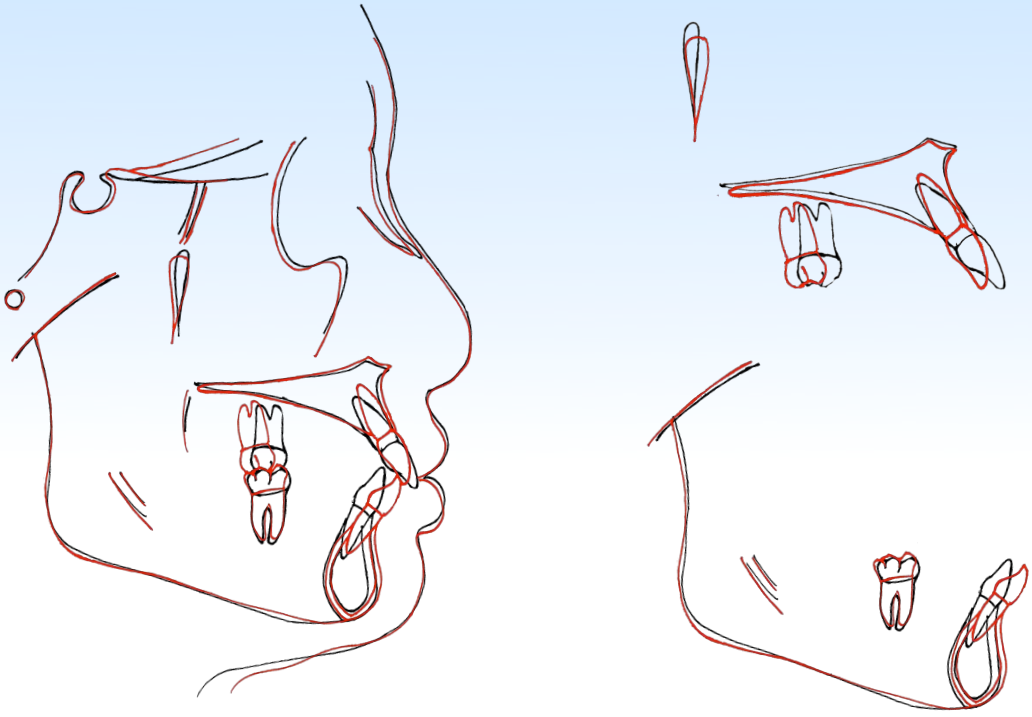


Fig. 9 Superimposed tracings. Upper anteriors were slightly retracted and the lower anteriors flared. Upper molars were distalized with slightly extruded.

months later, the upper left central incisor was built up to match the size of the counterpart. (Figures 12 -14)

In the 10th month of the treatment, Cl I occlusion was achieved. Bracket corrections were performed as needed with the reference from the panoramic film. Meanwhile, the lingual frenectomy was performed to solve a tongue-tie problem (Figures 16 and 17).

One month prior to the completion of active treatment, the upper archwire was sectioned distal to the cuspids bilaterally, and 2 oz vertical elastics were used for final detailing (Figures 15). After the buccal segments were seated in occlusion, fixed appliances were removed and retainers were delivered. Total treatment time was 27 months. A week after fixed appliance removal, a gingivectomy of the maxillary incisors was performed with a diode laser to improve the incisal exposure (Figure 18). Post-treatment panoramic and cephalometric radiographs (Figure 8), and superimpositions of cephalometric tracings (Figure 9) document the final result.

RESULTS ACHIEVED

Maxilla (all three planes):

- A - P: Maintained.
- Vertical: Maintained.
- Transverse: Maintained.

Mandible (all three planes):

- A - P: Maintained.
- Vertical: Maintained.
- Transverse: Maintained.

Maxillary Dentition

- A - P: Maxillary incisors retracted to achieve normal inclination.
- Vertical: Maintained.
- Inter-molar Width: Increased 4 mm.

Mandibular Dentition

- A - P: Mandibular incisors flared to correct overjet
- Vertical: Maintained.
- Inter-molar / Inter-canine Width: Increased 3 mm / Increased 1 mm.

Facial Esthetics: Maintained.

RETENTION

When the upper clear overlay retainer was delivered, the patient was instructed to wear it full time for the first 6 months and nights only thereafter. The upper and lower 3-3 retainer were bonded on every tooth. The patient was

Fig. 10 *Uneven size of upper central incisors*

Fig. 11 *Talon cusp of upper right central incisor (occlusal view)*

Fig. 12 *After endodontic treatment of upper right central incisor*

Fig. 13 *Building up the upper left central incisor to the size of the upper right central incisor and application of bite turbos*

Fig. 14 *Symmetrical size of upper centrals*

Fig. 15 *Finishing stage using up-and- down elastics*

instructed about home hygiene and maintenance of the retainers because permanent fixed retention of the mandibular anterior segment was required.

FINAL EVALUATION OF TREATMENT

Retraction, alignment and restorative recontouring of upper incisors helped resolve the patient's chief complaint. The excessive overjet and overbite were reduced. Wearing elastics as instructed was essential for correction of the Class II buccal segments.

Once the mandibular intermolar width was corrected, it was necessary to expand the canines and flare the incisors to compensate for the incisal tooth size discrepancy. It was anticipated that the mandibular anterior expansion and flaring would be a challenge for stability, so the patient was informed that she would be on long-term recall indefinitely. The ABO Cast-Radiograph Evaluation was scored at 15 points, indicating a finished occlusion had been achieved that was within the usual ABO standard of 26 points. The major discrepancy was the lingual inclination of lower molars, which resulted in a deduction of 4 points under mandibular buccolingual inclination, and 8 points under lingual surface, occlusal contacts (Figures 19-21). Overall, there was significant improvement in both dental esthetics and occlusion. The patient was especially satisfied with the improvement of the upper central incisors.

DISCUSSION

Orthodontic patients with the talon cusp anomaly may be substantial esthetic and functional challenges. Excessive overjet and deep bite complicate the problem, because talon cusp must be removed to achieve an ideal interincisal relationship. Talon cusp belongs to a group of dental anomalies referred to as dens evaginatus. This protuberlence contains all the structural elements of a tooth: enamel, dentin, and pulp tissue[3,4]. Because of the possibility of pulp degeneration, the patient was informed about the need for endodontic treatment, the probability of crown discoloration, and the necessity for full coverage crowns on the maxillary central incisors sometime in the future.

Proclination of the lower anterior teeth was expected in this case due to anterior tooth size discrepancy and nonextraction treatment plan. In addition to the selection of

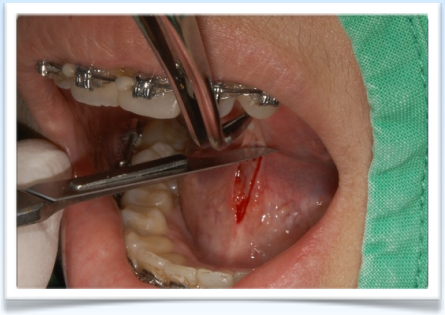


Fig. 16 *Lingual frenectomy procedure*

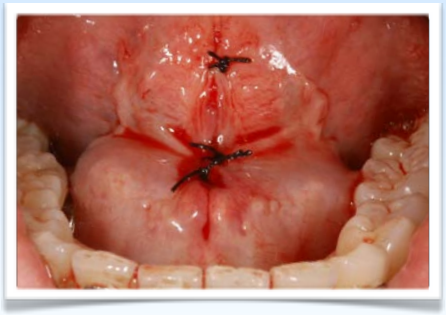


Fig. 17 *Sutures after surgery*

Fig. 18 *Gingivectomy with diode laser to harmonize the gingival level*

Fig. 19 *The lower cast shows lingually inclined molars.*

Fig. 20 *Measuring the buccallingual inclination with ABO gauge*

Fig.21 *Close-up view of digitation of posterior dentition from the back view*

a negative torque prescription, interproximal reduction (IPR) may have improved the result but that would have required more width reduction of the maxillary central incisors which was deemed to be a restorative problem. According to Mills[5] the average amount of "stable" proclination of lower incisors is only about 1 to 2 mm, and even that modest protrusion usually requires fixed retention. For the present patient, the proclination of the lower incisors was 3 mm beyond the normal range, so a lower anterior fixed retainer was essential for long-term stability.

The major deduction of scores in the ABO Cast-Radiograph Evaluation[6,7] of this patient was for the buccolingual inclination of the lower molars. In spite of the endeavor to increase the buccal crown torque of the lower molars, the torque of the lower molars was still not enough. The possible reason is that the upper arch was not expanded enough. In brief, pre-torqued Damon® brackets and anterior bite turbos in conjunction with Cl II elastics are effective mechanics for nonextraction correction of class II low angle in an adult. A satisfactory result was achieved with 27 months of active treatment. Talon cusp and the disproportion of the central incisors were corrected. Long-term stability of the present camouflage approach requires careful adherence to the retention protocol.

REFERENCES

1. Raoul C.M. Hennekam and Jaap M. Van Doorne. Oral Aspects of Rubinstein-Taybi Syndrome . Am J Med Genet Suppl. 1990;6:42–47.
2. Dinesh Rao B, Sapna Hegde. Talon Cusp on Fused Teeth Associated with Hypodontia: Report of a Unique Case. Eur J Dent 2010;4:75-80
3. José Antônio Brufato FERRAZ, Jacy Ribeiro deCARVALHO JÚNIOR, Paulo César SAQUY, Jesus Djalma PÉCORA, Manoel D. SOUSA-NETO. Dental Anomaly:Densevaginatus (Talon Cusp) Braz Dent J (2001) 12(2):132-134.
4. Kara J. McDullopch, Christine M Mills, Raymond S.Greenfeld,Jeffrey. Coil. Dens evaginatus from an orthodontic perspective: Report of several clinical cases and review of the literature. American journal of Orthodontics and Dentofacial Orthopedics. Vol.112,No.6, P. 670-675, December 1997.
5. Mills JR: The stability of the lower labial segment: a cephalometric survey. Dent Pract Dent Rec 1968;18:293-306
6. Chang C.: Advanced Damon Course No. 10,11 : DI & CRE Workshop (1)(2)., Podcast Encyclopedia in Orthodontics 2010, Newton's A Ltd, Taiwan
7. Huang CL. The ABO Discrepancy Index - A Measure of Case Complexity , News & Trends in Orthodontics 13:24, 2009.

DISCREPANCY INDEX WORKSHEET

CASE # _____ **PATIENT**

TOTAL D.I. SCORE 18

EXAM YEAR
ABO ID#

OVERJET

0 mm. (edge-to-edge)	=	1 pt.
1 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
7.1 – 9 mm.	=	4 pts.
> 9 mm.	=	5 pts.

Negative OJ (x-bite) 1 pt. per mm. per tooth =

Total = 2

OVERBITE

0 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
Impinging (100%)	=	5 pts.

Total = 2

ANTERIOR OPEN BITE

0 mm. (edge-to-edge), 1 pt. per tooth
then 1 pt. per additional full mm. per tooth

Total = 0

LATERAL OPEN BITE

2 pts. per mm. per tooth

Total = 0

CROWDING (only one arch)

1 – 3 mm.	=	1 pt.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	4 pts.
> 7 mm.	=	7 pts.

Total = 4

OCCLUSION

Class I to end on	=	0 pts.	
End on Class II or III	=	2 pts. per side	_____ pts.
Full Class II or III	=	4 pts. per side	_____ pts.
Beyond Class II or III	=	1 pt. per mm. additional	_____ pts.

Total = 4

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 0

BUCCAL POSTERIOR X-BITE

2 pts. per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

SN-MP
≥ 38° = 2 pts.

Each degree > 38° _____ x 2 pts. = 0

≤ 26° = 1 pt.

Each degree < -2° _____ x 1 pt. = _____

Each degree > 6° _____ x 1 pt. = _____

Each degree < 26° **1** x 1 pt. = 1

1 to MP ≥ 99° = 1 pt.

Each degree > 99° _____ x 1 pt. = _____

Total = 2

OTHER (See Instructions)

Supernumerary teeth	_____ x 1 pt. =	_____
Ankylosis of perm. teeth	_____ x 2 pts. =	_____
Anomalous morphology	_____ x 2 pts. =	**2**
Impaction (except 3rd molars)	_____ x 2 pts. =	_____
Midline discrepancy (≥3mm)	@ 2 pts. =	_____
Missing teeth (except 3rd molars)	_____ x 1 pts. =	_____
Missing teeth, congenital	_____ x 2 pts. =	_____
Spacing (4 or more, per arch)	_____ x 2 pts. =	_____
Spacing (Mx cent. diastema ≥ 2mm)	@ 2 pts. =	_____
Tooth transposition	_____ x 2 pts. =	_____
Skeletal asymmetry (nonsurgical tx)	@ 3 pts. =	_____
Addl. treatment complexities	_____ x 2 pts. =	**2**

Identify:

Total = 4

Exam Year
ABO ID#

Examiners will verify measurements in each parameter.

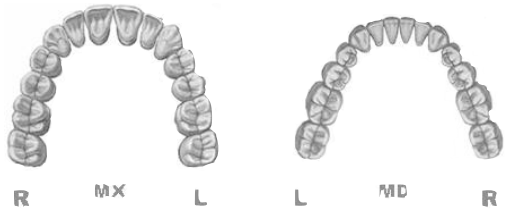
ABO Cast-Radiograph Evaluation (Rev.6-1-08)

Case # **Patient** Lee

Total Score: 15

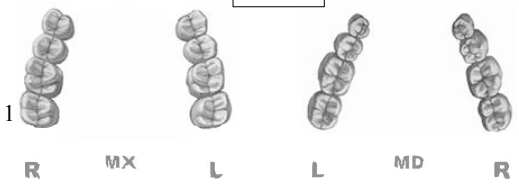
Alignment/Rotations

0



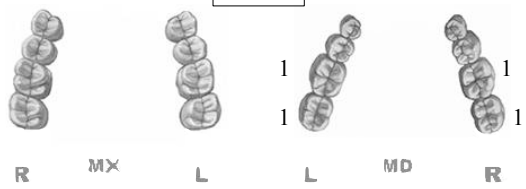
Marginal Ridges

1



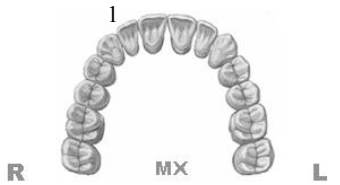
Buccolingual Inclination

4



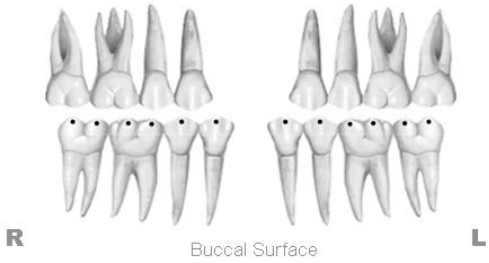
Overjet

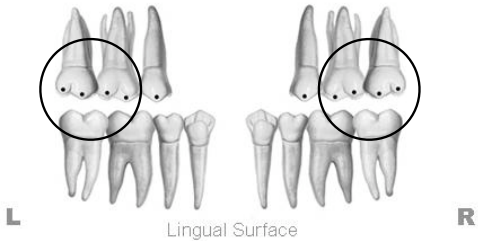
1



Occlusal Contacts

8



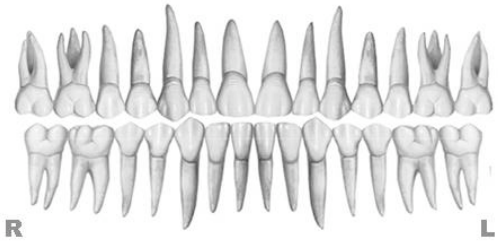


Occlusal Relationships

0

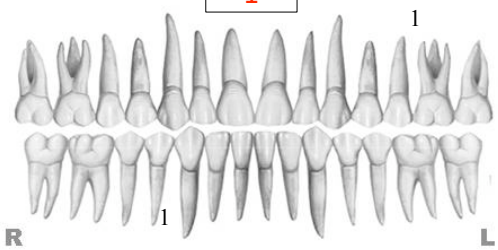
Interproximal Contacts

0



Root Angulation

1



INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

ABO Case Report

Class II Malocclusion Complicated by a Complex Impacted Cuspid: Introduction of the iSAS Method for More Clinical Assessment

HISTORY AND ETIOLOGY

A 12 year 1 month girl was referred by her family dentist for orthodontic consultation (Figure 1). There was no contributory medical or dental history. Her chief complaints were irregular central incisors and one retained primary canine (Figures 2 and 3). The patient and her parents desired comprehensive orthodontics treatment to achieve an ideal alignment of the entire dentition (Figures 4-6).

The initial clinical examination revealed a Class I molar relationship on the right side, and a Class II molar relationship on the left. Both the overjet and overbite were 4 mm. The maxillary dental midline was 2 mm to the right of the facial and maxillary midlines; upper incisor crowding was a contributing factor. A retained primary canine was noted on the maxillary right side. The pretreatment panoramic radiograph (Figure 7) revealed a deep impaction of maxillary right canine, and its crown was near the apex of the adjacent maxillary incisor. Although the treatment plan was to achieve ideal alignment of the impacted cuspid (Figure 8), the path of tooth movement was not clear. The patient was referred for pretreatment cone-beam computed tomography (CBCT) radiograph (Figure 9). The CBCT images revealed that the canine cusp tip was impacted near the root apices of the adjacent central and lateral incisors. Figure 10 documents the cephalometric history of the treatment rendered.

Fig 1. *Pretreatment facial photographs*

Fig 2. *Pretreatment intraoral photographs*

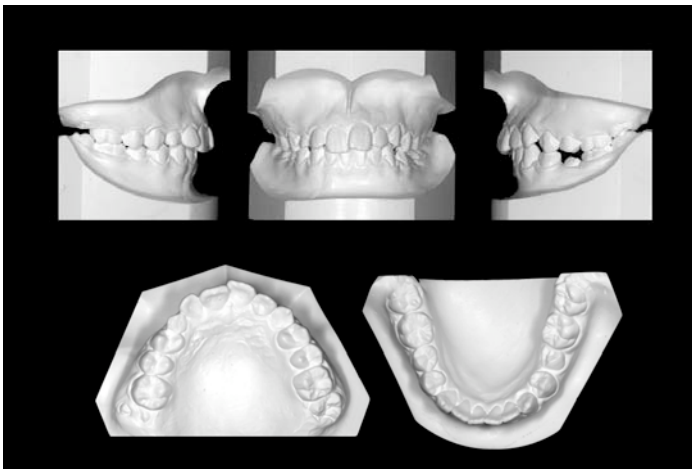


Fig. 3. *Pretreatment study models*

DIAGNOSIS

Skeletal :

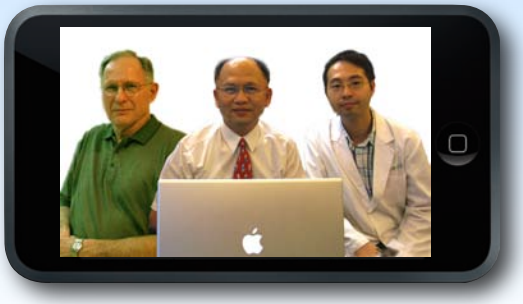
Skeletal Class I with SNA 82°, SNB 79°, and ANB 3° (Figure 7 and Table).

Normal mandibular plane angle (SN-MP 36°, FMA 29°).

Dental :

Right side Class I molar relationship and left side end-on Class II molar relationship.

The overbite and overjet were both 4 mm.



Dr. Chris HN Chang, Director, Beethoven Orthodontic Center (middle)
Dr. Billy Su, Lecturer, Beethoven Orthodontic Course (right)
Dr. W. Eugene Roberts, Consultant, *News and Trends in Orthodontics* (left)

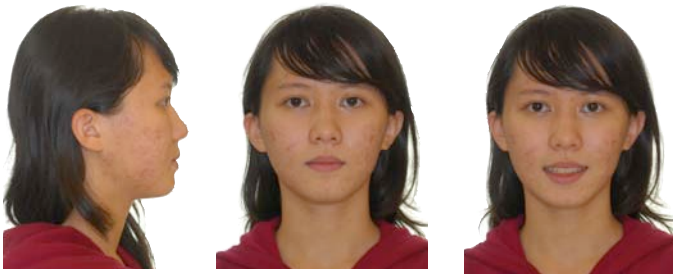


Fig. 4. *Posttreatment facial photographs*

Fig. 5. *Posttreatment intraoral photographs*

Fig. 6. *Posttreatment study models*

The maxillary dental midline was 2 mm to the right of the facial and maxillary midlines.

Retained right maxillary primary canine.

There were no signs or symptoms of TMJ dysfunction.

The ABO Discrepancy Index (DI) was 26 as shown in the subsequent work sheet.

Facial : Near ideal profile with acceptable lip position.

SPECIFIC OBJECTIVES OF TREATMENT

Maxilla (all three planes):

- A - P : Allow for normal expression of growth.
- Vertical : Maintain
- Transverse : Maintain

Mandible (all three planes):

- A - P : Allow for normal expression of growth.
- Vertical : Maintain
- Transverse : Maintain

Maxillary Dentition

- A - P : Maintain
- Vertical : Maintain.
- Inter-molar Width : Maintain

Mandibular Dentition

- A - P : Maintain
- Vertical : Molar extrusion to open the bite.
- Inter-molar / Inter-canine Width: Maintain.

Facial Esthetics **:** Maintain.

TREATMENT PLAN

A non-extraction treatment, with a full fixed orthodontics appliance, was indicated to correct the crowding, level the curve of Spee, and coordinate the arches. At the initial stage of treatment, space was opened for the impacted canine and the patient was referred for surgical exposure (Figure 11).

Fig. 7. *Pretreatment pano and ceph radiographs show the high impacted canine and retained primary canine.*

Fig. 8. *Posttreatment pano and ceph radiographs show a balancing lip profile.*

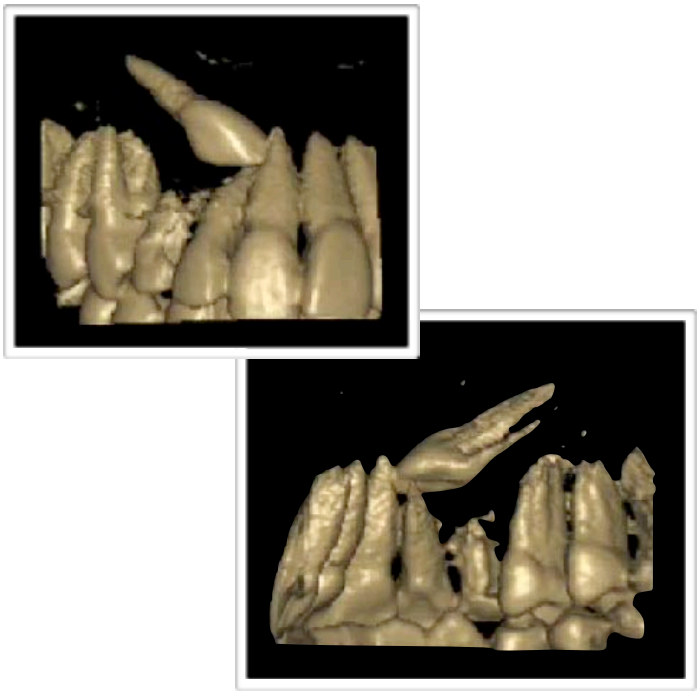


Fig. 9. *3D images show #13 is in good morphology without any pathological change. The cusp tip of #13 is located in the root apex area between #12, 11.*

CEPHALOMETRIC			
SKELETAL ANALYSIS			
	PRE-TX	POST-TX	DIFF.
SNA°	82°	81°	1°
SNB°	79°	78°	1°
ANB°	3°	3°	0°
SN-MP°	36°	38°	2°
FMA°	29°	31°	2°
DENTAL ANALYSIS			
U1 TO NA mm	2 mm	2 mm	0 mm
U1 TO SN°	113°	112°	-1°
L1 TO NB mm	3 mm	4 mm	1 mm
L1 TO MP°	85°	91°	6°
FACIAL ANALYSIS			
E-LINE (U)	-1 mm	-1 mm	0 mm
E-LINE (L)	-1 mm	-1 mm	0 mm

Table 1. *Cephalometric summary*

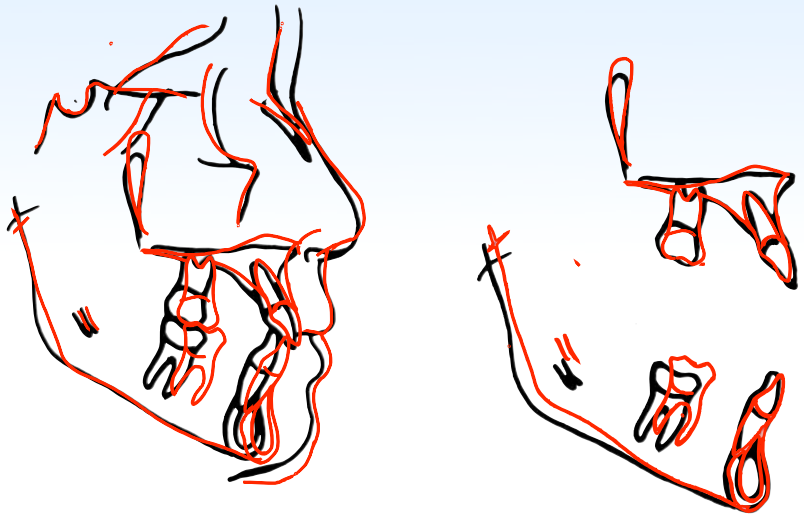


Fig. 10. *Superimposed tracings show a sight extrude and protraction of the mandibular molars.*

Bilateral OrthoBoneScrews® inserted into the infra-zygomatic crests were indicated to prevent the anterior segment from flaring and to assist with anchorage to distally tip the impacted cuspid. A 3-dimensional level arm was inserted into the square hole of the right OrthoBoneScrew® to correct the angulation and position of the impacted canine (Figure 12). Figure 13 documents the recovery of the impacted canine. After the canine was aligned, the maxillary dentition was retracted with NiTi open coil springs extended from the bone screws to the anterior segment, bilaterally (Figure 14). Class II elastics were used to achieve a Class I interdigitation and bilateral triangular canine elastics were used to detail the occlusion (Figure 15). At the debonding visit, upper Hawley removable and lower 3-3 fixed retainers were delivered.

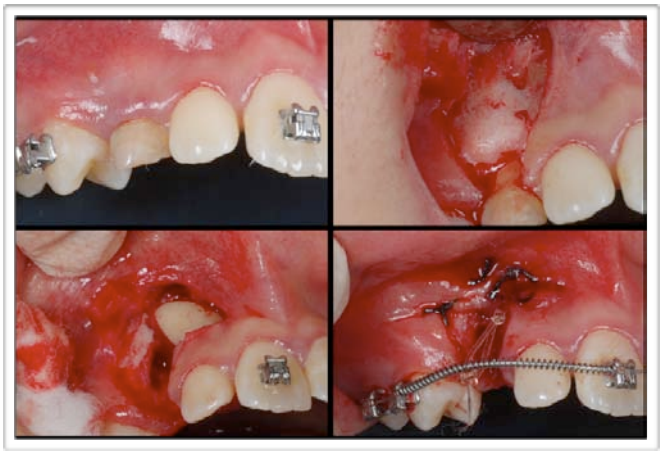


Fig. 11. *APF procedures show as illustrated. Especially noted that the bone covering crown and pathway for erupting cuspid are removed.*

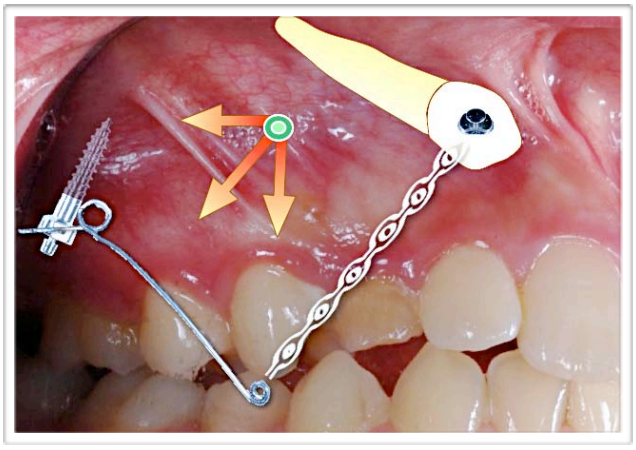


Fig. 12. *Design a force system which distalizes the canine first, then move buccally a little, finally downward to the reserved canine space.*

APPLIANCES AND TREATMENT PROGRESS

0.022" Damon D3MX® brackets (Ormco Corporation) were used. To facilitate space opening, for the impacted maxillary right canine with an open coil spring, no bracket was bonded on the adjacent lateral incisor initially. The wire sequence was as follows: .014" copper NiTi, .014X25" NiTi, .017X25" TMA, and .019X25" SS. The elastics were upgraded gradually from 2 →3 → 3.5 → 4.5 → 6 oz.

In the 4th month of treatment, the impacted maxillary canine was surgically exposed with an apically positioned flap (Figure 11). The procedure involved two vertical incisions and one horizontal incision over the area of impacted canine. A full thickness flap was reflected to expose the overlying bone. The bone was removed down to the CEJ of the impacted canine. Then the upper right primary canine was extracted and a path was created from the crown of the impacted tooth to the extraction socket. An eyelet was bonded on the crown of the impacted canine and tied with a plastic tube to the main arch wire. The flap was placed on the CEJ and sutured with silk (Figure 11).

After one week, sutures were removed and an OrthoBoneScrew® was placed in the infra-zygomatic crest on the right side. A .017x.025 inch TMA lever arm was fabricated with a helical coil on one end and helical attachment on the other end. When this lever arm was inserted in the square hole on

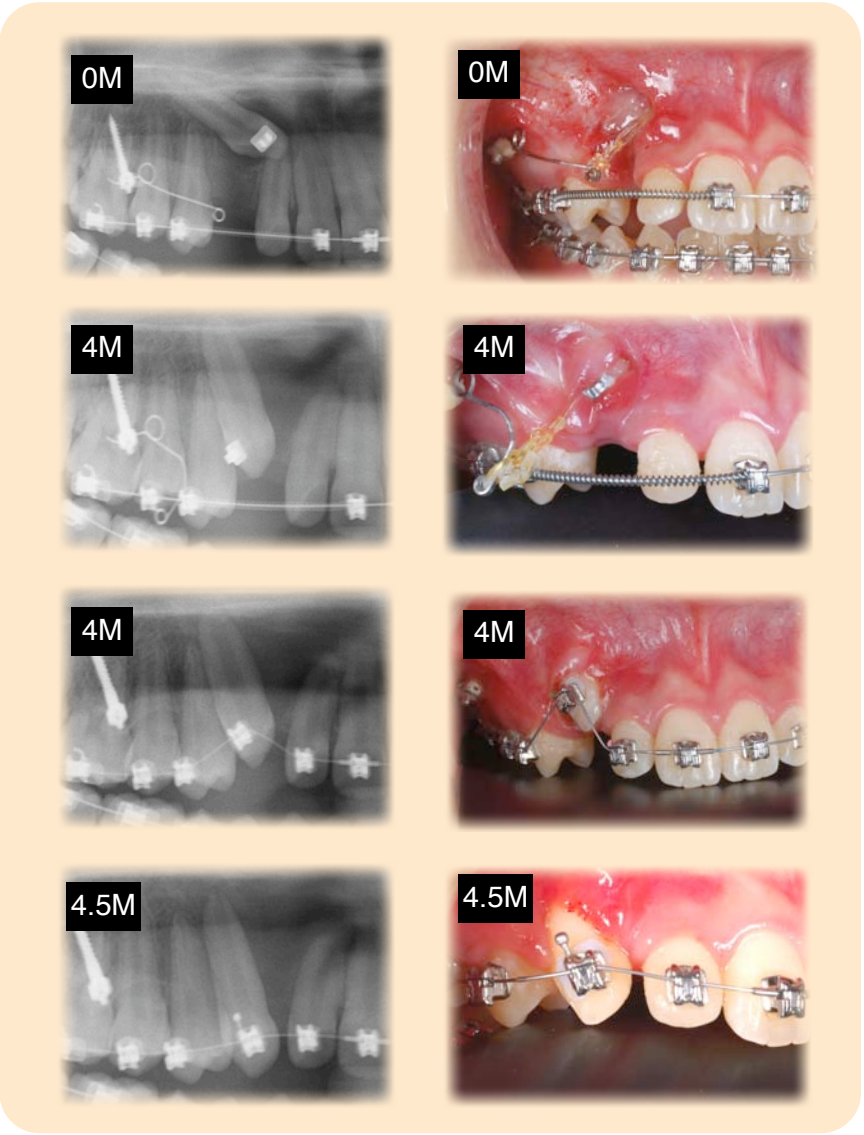


Fig. 13. *Radiographs and intra-oral photos documented the first day of bonding, 4 month later and 4.5 month later since traction began. Key to success: The right lateral incisor was not bonded and remain as a free body.*

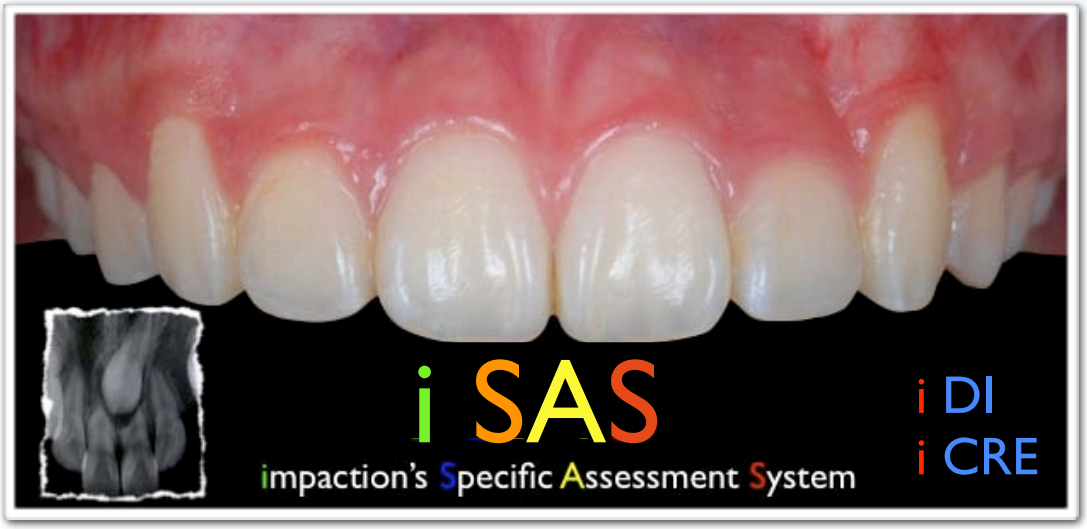
Fig. 14. *19th month, two close NiTi spring were applied to retract the anterior segment.*

Fig. 15. *30th month, U3L34 triangular elastic (4 oz) was applied.*

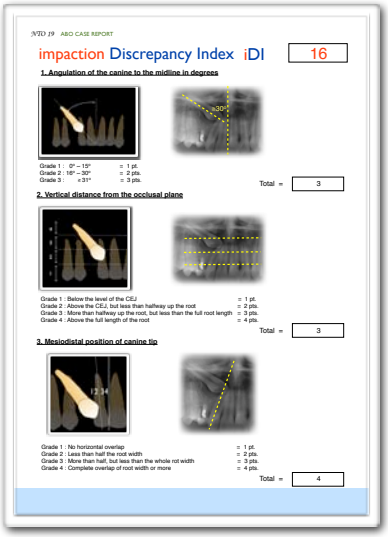
the OrthoBoneScrew® (located at infrazygomatic crest) and activated, it delivered a force system which distalized the canine, moved it slightly to the buccal, and then occlusally into the canine space (Figure 12). After 4 months of traction (8th month of treatment), the impacted canine was aligned axially and positioned for bracket placement. In the 12th month, the impacted canine was extruded to the level of the occlusal plane by the .014 NiTi wire (Figure 13). A panoramic radiograph was taken to evaluate root angulation of the teeth and re-position the brackets. The wire sequence was as follows: .014X25" NiTi, .017X25" TMA, and .019X25" SS. The OrthoBoneScrew® (2x12 mm, stainless steel) was implanted on the left side of the infrazygomatic crest and the close NiTi springs were applied on the both sides of the OrthoBoneScrews® to retract the upper dentition in the 19th month (Figure 14). In the 30th month, a minor odontoplasy procedure was performed on the cusp tip of the canine by using green stone (Figure 16), and U3L34 triangular elastics (4 oz) were applied (Figure 15). One month prior to completion of treatment, the

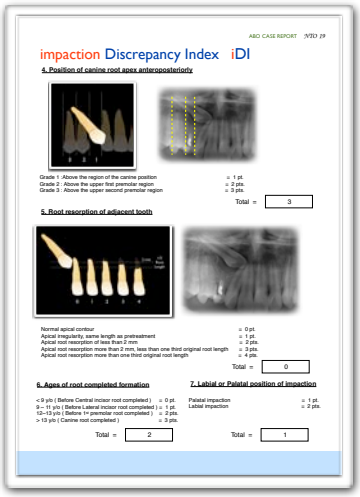
Fig. 16. *Reshape the sharp edge of #13 with green stone.*

Fig. 17. *In the 34th month, the upper archwire was sectioned distal to the cuspids. Light vertical elastics (2 oz) were used for final detailing.*



iDI





upper archwire was sectioned distal to the bicuspids. Light vertical elastics (2 oz) were used for final detailing (Figure 17). Appliances were subsequently removed and retainers were delivered after 35 months of active treatment.

RESULTS ACHIEVED

Maxilla :

- A - P : Anterior ~1 mm.
- Vertical : Maintained.
- Transverse : Maintained.

Mandible :

- A - P : Anterior ~ 3-4 mm.
- Vertical : Increased ~1 mm.
- Transverse : Maintained.

Maxillary Dentition :

- A - P : Maintained.
- Vertical : Maintained.
- Inter-molar Width : Maintained.

Mandibular Dentition :

- A - P : Maintained.
- Vertical : Molar extruded ~ 2-3 mm.
- Inter-molar / Inter-canine Width : Molar width increased 3 mm, canine width was maintained.

Facial Esthetics : Maintained a normal growth pattern while slightly retracting the upper lip.

RETENTION

An upper clear overlay retainer was delivered. The patient was instructed to wear it full time for the first 6 months and nights only thereafter. The upper and lower fixed 3-3 retainer were bonded on every tooth after the finish records were obtained (Figures 5, 6 and 10). The patient was instructed on home care and maintenance of the retainers. Tongue posture, lip competence and bite-squeeze (clenching) exercises were also recommended after treatment.

FINAL EVALUATION OF TREATMENT

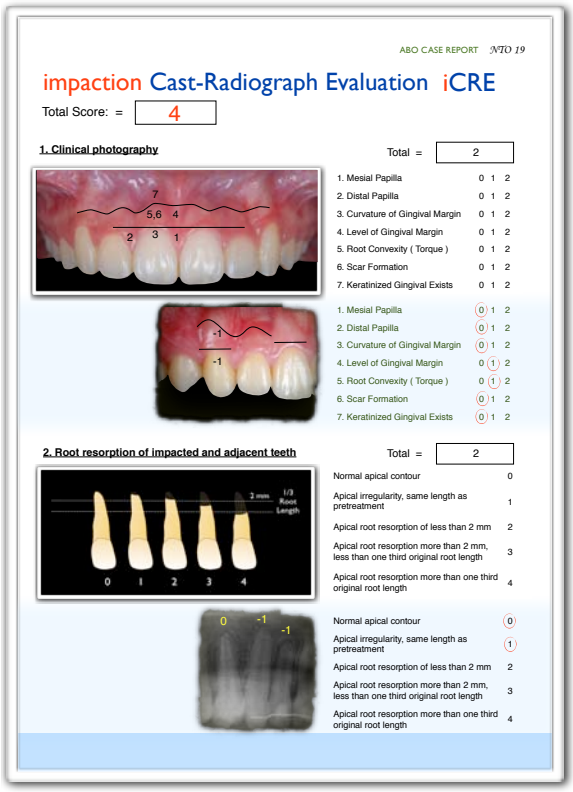
The ABO Cast-Radiograph Evaluation was scored at 25 points indicting a finished occlusion that is within the ABO standard of ≦ 26 points for an acceptable board case. The major alignment discrepancies were: bilateral Class II buccal interdigitation, alignment and rotation problems, as well as multiple marginal ridge discrepancies.

For the present patient, this high impaction of the maxillary canine was corrected in about 4 months. CBCT imaging provided important diagnostic information to design appropriate segmental mechanics (Figures 12-13). In general, the treatment results were deemed satisfactory. The NiTi maxillary arch retraction springs anchored with OrthoBoneScrews® were effective for preventing excessive anterior overjet and lip protrusion. Continuous tongue posture and bite-squeeze (clenching) exercises are indicated to prevent relapse of the open bite.

DISCUSSION

Ectopic eruption and impaction of teeth are common problems in orthodontics. Repositioning the displaced teeth in their proper position is often a challenging problem. For the present patient, the DI score was only 10 points. Although the DI has proven to be an effective indicator of treatment complexity (severity) for most patient, it underestimates the difficulty for high canine impactions. A revision of the DI to more appropriately weight the difficult osseous impactions is indicated. An impaction Specific Assessment System (iSAS) to supplement the ADO DI is proposed that is based on 7 criteria: 1. Angulation of the canine to the midline in degrees, 2. Vertical distance from the occlusal plane, 3. Mesiodistal position of canine tip, 4. Position of canine root apex anteroposteriorly, 5. Root resorption of adjacent teeth, 6. Ages of root completed formation, 7. Labial or palatal position of impaction. Criteria 1-4 were abstracted from the original article by Padhraig et al. (2009) entitled "Influence of radiographic position of ectopic canines on the duration of orthodontic treatment."

iCRE



Panoramic and CBCT radiographs are required for the evaluation:

1. Angulation of the canine to the midline in degrees is scored as 1 point for 0-15°, 2 points for 16-30°, and 3 points if > 31°.

2. Vertical distance from the occlusal plane is scored progressively. If the cusp tip of the impaction is below the level of the CEJ of the adjacent tooth on the mesial, 1 point is scored. Above the CEJ, but less than halfway up the root, 2 points are scored. More than half way up the root, but less than the full root length, 3 points are scored. If the cusp tip is above the full length of the root, a score of 4 points is assessed.

3. Mesiodisal position of canine tip is scored progressively. If the cusp tip of the impaction does not horizontally overlap the distal surface of the lateral incisor, 1 point is scored; overlap of less than half the root width scores 2 points; more than half, but less than the whole root width, results in 3 points being scored; complete overlap of root width indicates a score of 4 points.

4. Anterior-posterior position of the canine root apex is assessed by scoring 1 point if the apex is superior to the normal canine position, 2 points if it is in the 1st premolar area, and 3 points if it is in the 2nd premolar area.

5. Root resorption of the adjacent teeth is scored according to severity. Normal apical contour and length is no score; apical contour irregularity but normal length is 1 point; for apical root resorption < 2 mm, 2 points are scored; for apical root resorption > 2 mm, but less than one third of the original root length, 3 points are scored; for apical root resorption more than one third original root length, 4 points are scored. X denotes an extracted tooth, and an N indicates an un-scored tooth.

6. Age relative to the completion of root formation is scored as 0 if the patient is < 9 years (before central incisor root completed formation); 1 point is scored for 9-11 years (before lateral incisor root has completed formation); 2 points are scored for 12-13 years (before first premolar root completed formation); and 3 points is scored for > 13 years (canine root has normally completed formation).

7. Labial or palatal position of the impaction is scored as 1 point for palatal position and 2 points for labial position relatice to the roots of adjacent teeth.

For the subject of this case report, the iDI score was 16 points. When added to the ABO DI score of 10 points, the total DI score was 26 points. It is proposed that this revised DI method, for weighting the clinical challenge of impacted teeth, is a more appropriate indicator of the complexity of the malocclusion.

Once the impacted tooth is recoverd, there may be a discrepancy in occlusion, root resorption and/or gingival compromise. The Cast/Radiograph Evaluation provide a reliable tool for self-assessment of the finished alignment of the recovered tooth, but there are no criteria for the evaluation of the gingival compromise and root resorption. A revision of the ABO CRE, deemed the improved Case Radiograph Evaluation (iCRE), more appropriately weights the assessment of the impacted canine by assessing two additional outcomes: 1. gingival esthetic score from clinical photographs, and 2. root resorption of the recovered and adjacent teeth.

The gingival response to a recovered impaction is assessed by the Pink Esthetic Score (PES) from clinical photography according to 7 variables scored from 0→2: mesial papilla, distal papilla, curvature of the gingival margin, level of the gingival margin, root convexity, scar formation, keratinized gingival band. The two papillary scores (mesial and distal) are assessed for a complete papilla (score 0), incomplete papilla, (score 1), or absence of a papilla(score 2). The curvature of the gingival margin, also

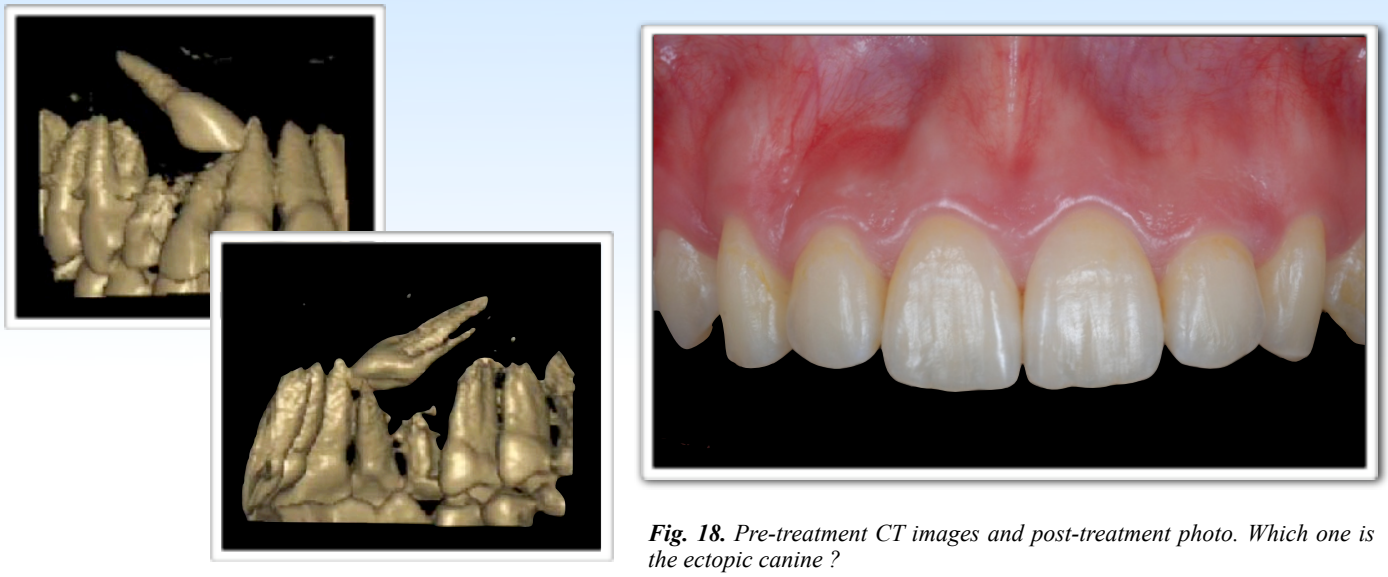


Fig. 18. *Pre-treatment CT images and post-treatment photo. Which one is the ectopic canine ?*

defined as the line of emergence of the gingival margin, is evaluated as being identical to comparative teeth (score 0), slightly different (score 1), or markedly different (score 2). The level of the gingival margin is scored by comparison to the contralateral tooth in terms of an identical vertical level (score 0), a slight (≦ 1 mm) discrepancy (score 1), or a major (≧ 1 mm) discrepancy (score 2). The root convexity (labial eminence) combines three additional specific soft tissue parameters as one variable: the presence (score 2), partial presence (score 0), or absence of a convex profile in the facial aspect (score 1). The scar formation is scored by the absence of scar (score 0), partial presence (score 1), and apparent presence (score 2). The keratinized gingiva is scored by the thick biotype (score 0), thin biotype (score 1) or absence of the keratinized gingiva (score 2).

Root resorption of the impaction and the adjacent teeth is scored as: 0 points for normal apical contour, same length as pretreatment; 1 point for apical irregularity, but the same length as pretreatment; 2 points for apical root resorption of <2 mm; 3 points for apical root resorption >2 mm, but less than one third original root length; and 4 points for apical root resorption more than one third original root length. Again, X denotes and an extracted tooth and N indicates an un-scored tooth.

For the present case report , the iCRE score was 4 points and the total CRE score was 25 points (the original CRE score 21 + iCRE score 4).

CONCLUSION

A thorough diagnosis, a well planned surgical strategy, and an efficient, force system design are essential components for successful management of an unfavorably positioned, high maxillary canine impactions. The ABO DI has proven to be an effective indicator of malocclusion complexity (severity) for a wide variety of patients. The CRE has evolved into a reliable and efficient assessment of the finished orthodontic cases. Since neither the DI or CRE comprehensively assess the complexity and clinical challenge of impacted teeth, the proposed "Impaction's Specific Assessment System (iSAS)" includes the iDI and iCRE, to provide a broader array of clinical parameters for patients with impacted teeth.

ACKNOWLEDGEMENT

Thanks to Tzu Han Huang for proofreading this article.

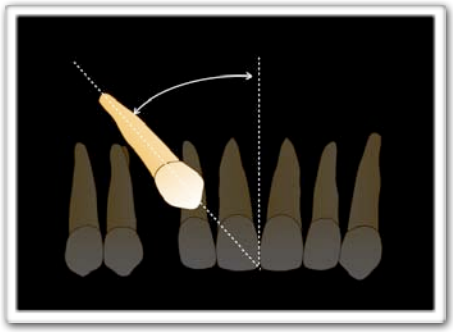
REFERENCES

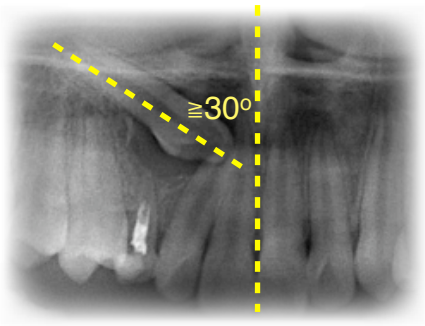
1. Tseng SP. High Maxillary Canine Impaction with Mesial and Labial Displacement. NTO 2010: vol 18 Apr. 1; 36-44.
2. Padhralg SF. Influence of Radiographic Position of Ectopic Canines on the Duration of Orthodontic Treatment. Angle Orthod. 2009: 79; 442-446.
3. David NR. Long-term Evaluation of Root Resorption Occurring During Orthodontic treatment. AJODO 1989: vol 96, Issue 1, July: 43-46.
4. Buser D. Outcome Evaluation of Early Placed Maxillary Anterior Single-Tooth Implants Using Objective Esthetic Criteria: A Cross-Sectional, Retrospective Study in 45 Patients With a 2- to 4- Year Follow-Up Using Pink and White Esthetic Scores. J Periodontol 2009: 80; 140-151.
5. Chang C. Advanced Damon Course No. 10,11 : DI & CRE Workshop (1)(2)., Podcast Encyclopedia in Orthodontics 2010, Newton's A Ltd, Taiwan.
6. Huang CL. The ABO Discrepancy Index - A Measure of Case Complexity. News & Trends in Orthodontics 13:24, 2009.

impaction Discrepancy Index iDI

16

1. Angulation of the canine to the midline in degree

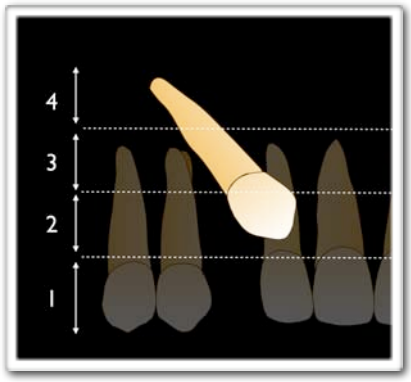


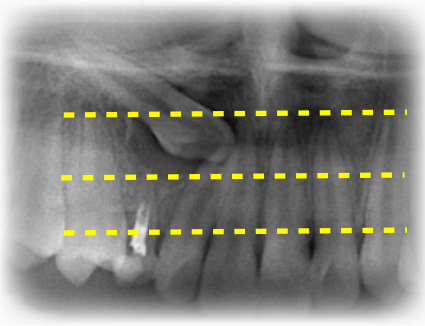


Grade 1 : 0° ~ 15° = 1 pt.
Grade 2 : 16° ~ 30° = 2 pts.
Grade 3 : ≧ 31° = 3 pts.

Total = 3

2. Vertical distance from the occlusal plane

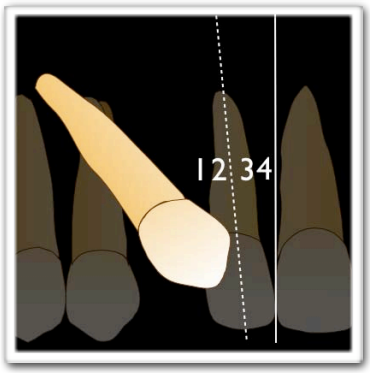


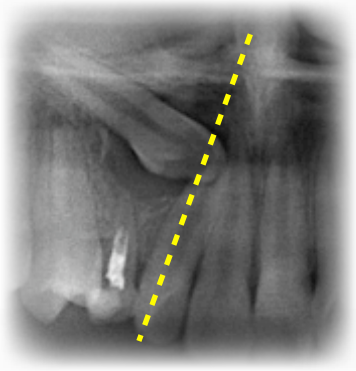


Grade 1 : Below the level of the CEJ = 1 pt.
Grade 2 : Above the CEJ, but less than halfway up the root = 2 pts.
Grade 3 : More than halfway up the root, but less than the full root length = 3 pts.
Grade 4 : Above the full length of the root = 4 pts.

Total = 3

3. Mesiodistal position of the canine tip



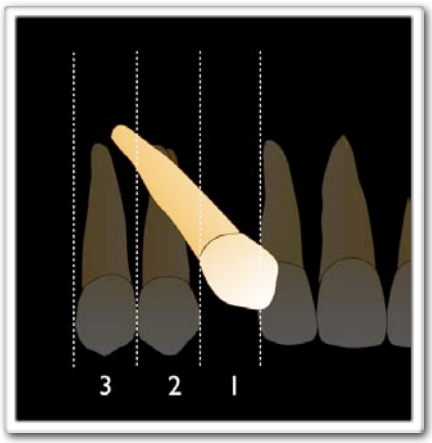


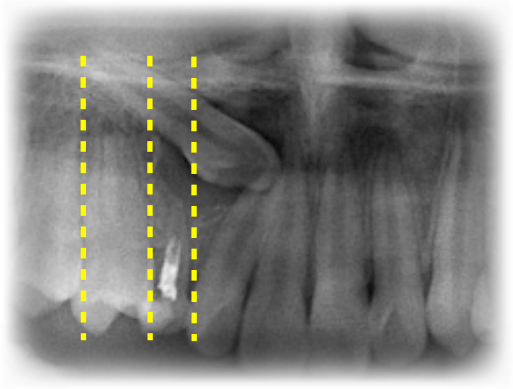
Grade 1 : No horizontal overlap = 1 pt.
Grade 2 : Less than half the root width = 2 pts.
Grade 3 : More than half, but less than the whole rot width = 3 pts.
Grade 4 : Complete overlap of root width or more = 4 pts.

Total = 4

impaction Discrepancy Index iDI

4. Anterior-posterior position of the canine root apex

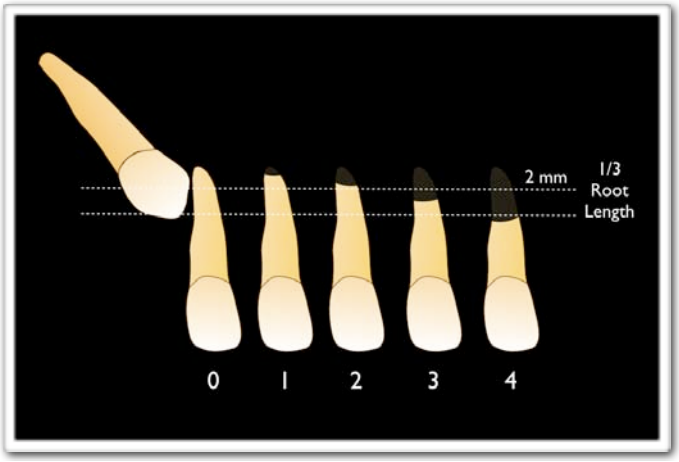


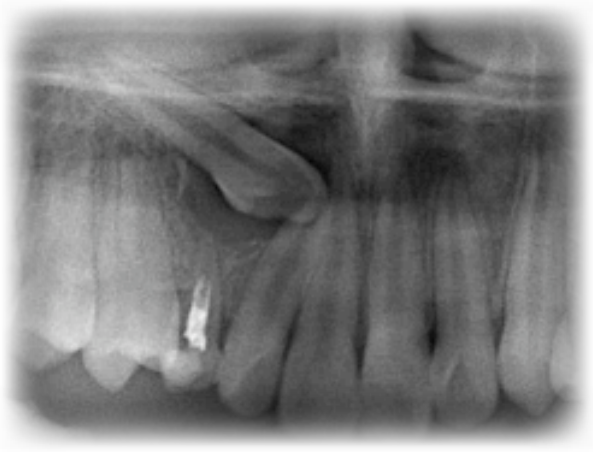


Grade 1 :Above the region of the canine position = 1 pt.
Grade 2 : Above the upper first premolar region = 2 pts.
Grade 3 : Above the upper second premolar region = 3 pts.

Total = 3

5. Root resorption of the adjacent tooth





Normal apical contour = 0 pt.
Apical irregularity, same length as pretreatment = 1 pt.
Apical root resorption of less than 2 mm = 2 pts.
Apical root resorption more than 2 mm, less than one third original root length = 3 pts.
Apical root resorption more than one third original root length = 4 pts.

Total = 0

6. Age relative to the completion of root formation

< 9 y/o (Before Central incisor root completed) = 0 pt.
9 ~ 11 y/o (Before Lateral incisor root completed) = 1 pt.
12~13 y/o (Before 1st premolar root completed) = 2 pts.
> 13 y/o (Canine root completed) = 3 pts.

Total = 2

7. Labial or palatal position of the impaction

Palatal impaction = 1 pt.
Labial impaction = 2 pts.

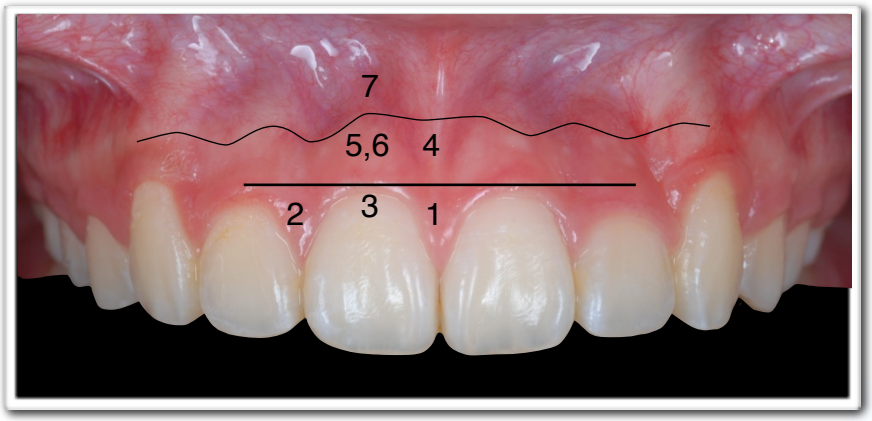
Total = 1

impaction Cast-Radiograph Evaluation iCRE

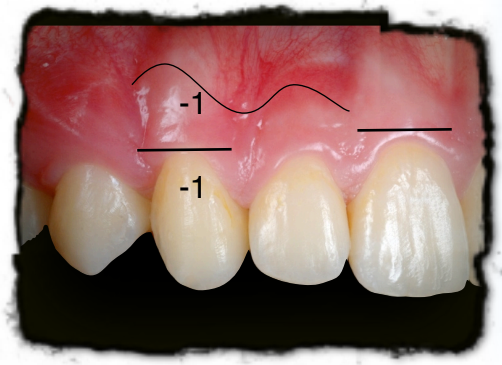
Total Score: = 4

1. Gingival esthetic score

Total = 2



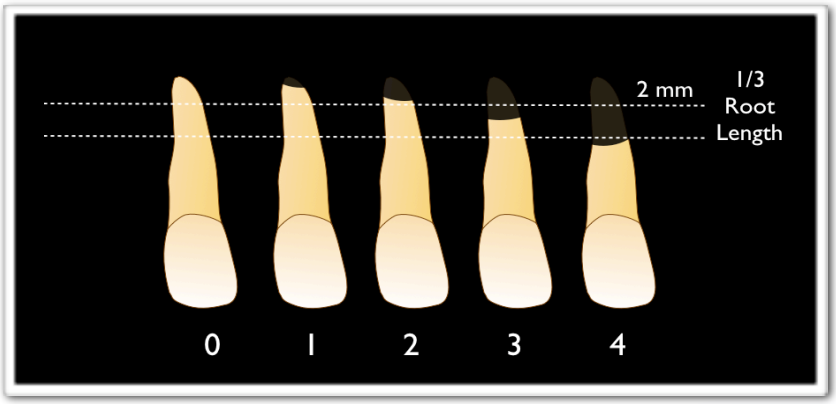
1. Mesial Papilla	0	1	2
2. Distal Papilla	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2
7. Keratinized Gingival Exists	0	1	2



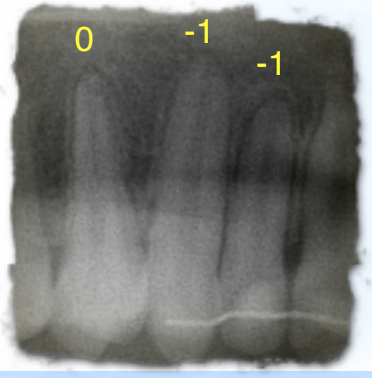
1. Mesial Papilla	(0)	1	2
2. Distal Papilla	(0)	1	2
3. Curvature of Gingival Margin	(0)	1	2
4. Level of Gingival Margin	0	(1)	2
5. Root Convexity (Torque)	0	(1)	2
6. Scar Formation	(0)	1	2
7. Keratinized Gingival Exists	(0)	1	2

2. Root resorption of the recovered and adjacent teeth

Total = 2



Normal apical contour	0
Apical irregularity, same length as pretreatment	1
Apical root resorption of less than 2 mm	2
Apical root resorption more than 2 mm, less than one third original root length	3
Apical root resorption more than one third original root length	4



Normal apical contour	(0)
Apical irregularity, same length as pretreatment	(1)
Apical root resorption of less than 2 mm	2
Apical root resorption more than 2 mm, less than one third original root length	3
Apical root resorption more than one third original root length	4

DISCREPANCY INDEX WORKSHEET

CASE # _____ PATIENT _____

TOTAL D.I. SCORE 10+16 = 26

EXAM YEAR
ID#

OVERJET

0 mm. (edge-to-edge)	=	1 pt.
1 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
7.1 – 9 mm.	=	4 pts.
> 9 mm.	=	5 pts.

Negative OJ (x-bite) 1 pt. per mm. per tooth =

Total = 2

OVERBITE

0 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
Impinging (100%)	=	5 pts.

Total = 2

ANTERIOR OPEN BITE

0 mm. (edge-to-edge), 1 pt. per tooth
then 1 pt. per additional full mm. per tooth

Total = 0

LATERAL OPEN BITE

2 pts. per mm. per tooth

Total = 0

CROWDING (only one arch)

1 – 3 mm.	=	1 pt.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	4 pts.
> 7 mm.	=	7 pts.

Total = 2

OCCLUSION

Class I to end on	=	0 pts.
End on Class II or III	=	2 pts. per side _____ pts.
Full Class II or III	=	4 pts. per side _____ pts.
Beyond Class II or III	=	1 pt. per mm. additional _____ pts.

Total = 2

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 0

BUCCAL POSTERIOR X-BITE

2 pts. per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

Each degree < -2° _____ x 1 pt. = _____

Each degree > 6° _____ x 1 pt. = _____

SN-MP

≥ 38° = 2 pts.

Each degree > 38° _____ x 2 pts. = _____

≤ 26° = 1 pt.

Each degree < 26° _____ x 1 pt. = _____

1 to MP ≥ 99° = 1 pt.

Each degree > 99° _____ x 1 pt. = _____

Total = 0

OTHER (See Instructions)

Supernumerary teeth	_____ x 1 pt. =	_____
Ankylosis of perm. teeth	_____ x 2 pts. =	_____
Anomalous morphology	_____ x 2 pts. =	_____
Impaction (except 3rd molars)	_____ x 2 pts. =	2
Midline discrepancy (≥3mm)	@ 2 pts. =	_____
Missing teeth (except 3rd molars)	_____ x 1 pts. =	_____
Missing teeth, congenital	_____ x 2 pts. =	_____
Spacing (4 or more, per arch)	_____ x 2 pts. =	_____
Spacing (Mx cent. diastema ≥ 2mm)	@ 2 pts. =	_____
Tooth transposition	_____ x 2 pts. =	_____
Skeletal asymmetry (nonsurgical tx)	iDI @ 3 pts. =	16
Addl. treatment complexities	_____ x 2 pts. =	_____

Identify:

Total = 18

Exam Year
ABO ID#

Examiners will verify measurements in each parameter.

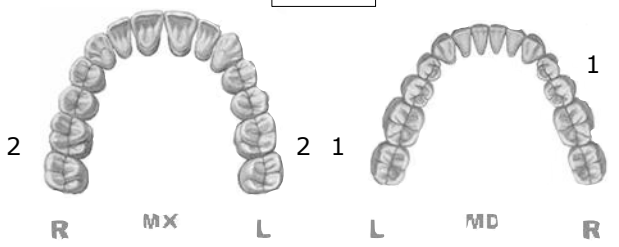
ABO Cast-Radiograph Evaluation (Rev.6-1-08)

Case # **Patient**

Total Score: 21+4 = 25

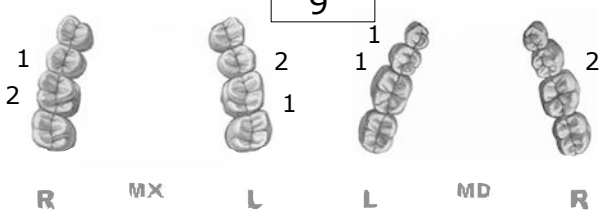
Alignment/Rotations

6



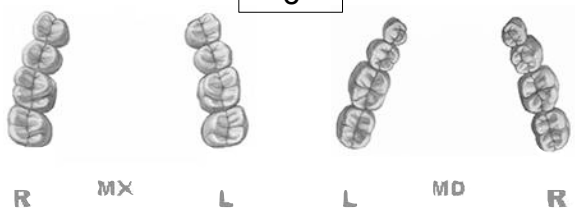
Marginal Ridges

9



Buccolingual Inclination

0



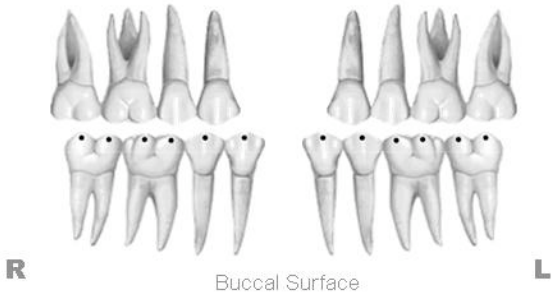
Overjet

0

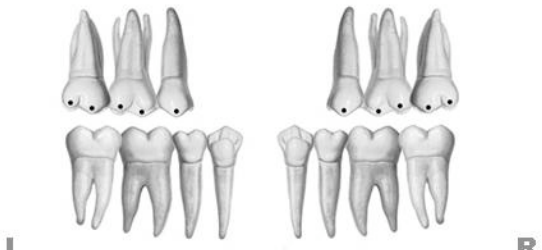
iCRE 4

Occlusal Contacts

0



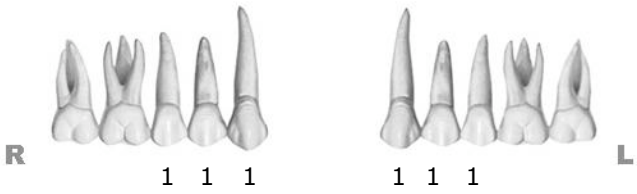
Buccal Surface



Lingual Surface

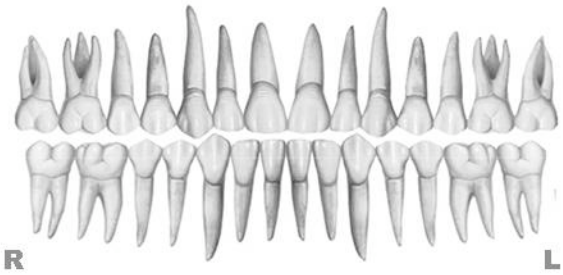
Occlusal Relationships

6



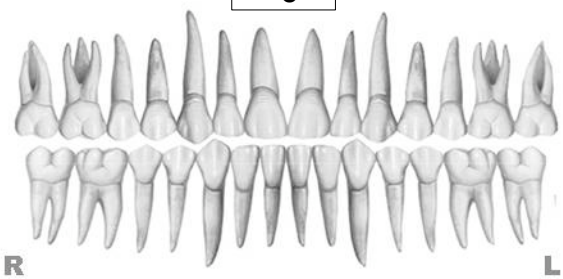
Interproximal Contacts

0



Root Angulation

0



INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

News & Trends in Orthodontics will be available on the iPod / iPad soon !

8/14-16, 2010

LECTURER:

Dr. John Lin

President of the Jin-Jong Lin Orthodontic Clinic. Dr. Lin received his MS. from Marquette University and is an internationally renowned lecturer. He's also the author of *Creative Orthodontics and* consultant to *News and Trends in Orthodontics* .

LECTURER: Dr. Chris Chang

President of the Beethoven Orthodontic Center. He received his PhD in bone physiology and Certificate in Orthodontics from Indiana University in 1996. As publisher of News & Trends in Orthodontics, he has been actively involved in the design and application of bone screws.

The visit to Beethoven and Newton's A center of this time was really an eye-opening experience for me in many ways. Among others, what impressed me the most was the confidence of staff members at work. Of course. it must be the consequence of a superb office management system. A lot of time and effort must have been poured in to establish the current status, which is well rewarded. Being inspired by the visit to Hshinchu, I have come back to my office with several new ideas to improve my own office system.

It was also a fun to get acquainted with some new friends from Thailand, Malaysia and Vietnam. Thank you very much for the wonderful and refreshing 2 days. I want to return some day with my staff members to show them how efficient an orthodontic office can be.

Dr. Tomio Ikegami, Japan (middle)
President of the Japan MEAW
Technique and Research Foundation

OrthoBoneScrew and Damon workshop includes two half-day lectures, two half-day chair-side observation sessions, one model practice and one case discussion session. The costs also covers two days of food and two nights of shared accommodation.

Cost: USD 1,200

Next dates: December 7-9

Keynote Presentation workshop includes a total of 6.5-hours of lecture and hands-on practice, focusing on improving your professional communication skills. The workshop will use Macintosh computers and its presentation software, Keynote 09.The costs also covers two days of food and two nights of shared accommodation.

Cost: USD 300

Contact: Ms. Huang
thhuang@newtonsa.com.tw

2010 International OrthoBoneScrew and Damon Workshop

August 14, 2010	
9:00—12:30	Chair-side observation
12:30—14:00	Lunch
14:00—14:20	Introduction of Beethoven and Anderson Clinic
14:20—16:00	Damon Q Essentials
17:30—	Dinner

August 15, 2010	
09:00—10:30	Optimized Orthodontic Treatment I Dr. Chris Chang
10:30—11:00	Break
11:00—12:00	Optimized Orthodontic Treatment II Dr. Chris Chang
12:00—	Lunch
	Taipei tour

August 16, 2010		
09:00—10:00	OBS tips	Dr. Chris Chang
10:00—10:10	Break	
10:10—12:30	Damon +Screw	Dr. John Lin
12:30—14:00	Lunch	
14:00—15:00	Model Practice	
15:00—19:00	Chair-side observation	

2010 Effective Keynote Presentation Workshop

August 17, 2010	
09:00—10:30	Introduction of Keynote: Organize your patient files for presentation
10:30—10:45	Break
10:45—12:00	Key Presentation Principles I
12:00—13:30	Lunch
13:30—14:30	Key Presentation Principles II
15:00—16:00	Key Presentation Principles III

OrthoBoneScrew

Beethoven Orthodontic Center, Taiwan

OrthoBoneScrew (OBS) has a double-crossed rectangular slot on its neck. This 0.019" x 0.025" rectangular slot provides a versatile use of orthodontic mechanics. A 0.018" x 0.025" wire can be secured in the slot firmly.

A Case Report Demonstrating OBS Application on Transpositional Cuspid.

Yu-Lin Hsu, Chris HN Chang, W. Eugene Roberts

A 16-year-5-month old female had an upper transpositional cuspid on the right side. The tip of the cuspid was located over the buccal side of the 1st molar area. The treatment plan was to extract the primary cuspid and pull the transpositional cuspid to the ideal position.

During the treatment, the primary cuspid was first extracted, followed by inserting an OrthoBoneScrew at the buccal side of the extraction site. Meanwhile, a full-thickness apically positioned flap was designed to expose the transpositional cuspid. A button was bonded on the lingual surface of the exposed cuspid, and a power-chain was attached between the OrthoBoneScrew and the button. In the 5th month of the treatment, another button was bonded on the buccal surface of the cuspid for de-rotation. After 7.5 month-long treatment, this transpositional cuspid has been pulled down for 12 mm. The distance between the OrthoBoneScrew and the cuspid has been shortened, as a result in the protraction, then the placement of the OrthoBoneScrew was changed to the interdental space of the incisor and the lateral incisor. This two-stage placement of the OrthoBoneScrew was to prevent the gingival impingement around the corner of the alveolar arch.

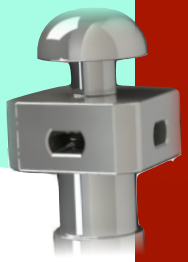
After the screw changed place, two power-chains were attached between the OrthoBoneScrew and the cuspid both labially and lingually. This labio-lingual traction could prevent the rotation effectively. With this direct force design, it only took 10 months to move the transpositional cuspid from the 1st molar area to the normal location.

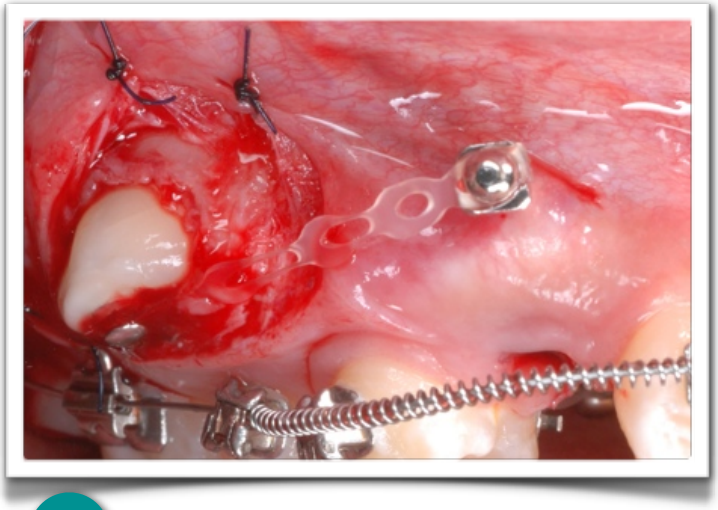
OrthoBoneScrew

Corporate Headquarters
2F, No. 25, Jian-Jhong First Road, Hsinchu, Taiwan 300
Tel: +886 3 5735676
Fax: +886 3 5736777
Contact:
info@orthobonescrew.com

Mushroom Head

Maximum patient comfort
Easy fit for power chain & NT coil spring





0.5m

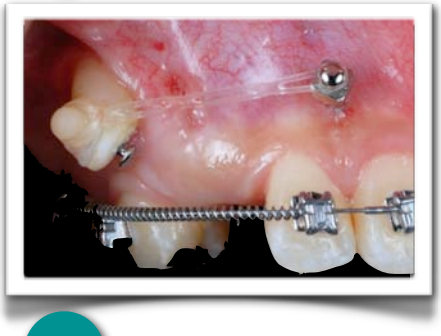
The transpositional cuspid has been exposed with a full-thickness apically positioned flap. After bonding a button, An 1.5x8 mm OrthoBoneScrew was inserted on the buccal side of canine space to protract the cuspid. Meanwhile, one should keep OBS as high as possible to make the switch easier.

2m

3m

5m

8m



9m

10m

貝多芬團隊 BEETHOVEN

貝多芬創辦人：
張慧男醫師

- 中華民國齒顎矯正專科醫師
- 美國齒顎矯正專科醫師學院院士（ABO）
- News & Trends in Orthodontics 發行人
- 美國印地安納普渡大學齒顎矯正研究所博士
- 國防牙醫系畢

貝多芬負責人張慧男醫師（後排中）及全體助理合影。

貝多芬牙科團隊
A Learning Organization

文 / 陳建綱、徐玉玲、黃思涵、蘇筌瑋

引言

貝多芬，是世界知名的音樂家，但是在台灣，他同時也是一家牙醫診所的名字。在知名的搜尋引擎 Google 中鍵入關鍵字「貝多芬」，在第五個順序就會自動出現“貝多芬牙醫“，點入之後有將近六千筆的結果，可見民眾在網路上想要去了解「貝多芬牙醫」的熱烈程度。

貝多芬牙醫團隊簡介

貝多芬牙科團隊是由張慧男醫師領導，從矯正牙科出發，包含「貝多芬一般牙科」、「安徒生兒童牙科」牙周病專科、贋復專科等牙醫專科醫師及優秀的牙醫助理團隊所組成。此外，強調以「學習」為核心價值的貝多芬團隊還另外成立「金牛頓藝術科技」，專職負責牙醫資訊科技，醫療器材研發以及牙科教育推廣的工作。為了能提供更完整的牙科照顧，我們也預計在明年成立一植牙中心，希望能讓有缺牙困擾的民眾更全面的治療環境。

診療區

開闊的空間設計，面對的是窗外中庭的一整片綠意，舒緩病患看診時等待的緊張心情。

貝多芬矯正中心-環境介紹

一進到貝多芬矯正牙科，櫃台美麗而親切的助理立即起身招呼，眼前寬敞的候診區以及初診病患的諮詢台，周圍不僅有整排的書櫃，有各種張醫師精選的書刊提供候診病患自由選擇，最難能可貴的是大面積的落地窗，讓光線自然而豐富的灑入，舒適而且無壓。

向內進入看診區，同樣的還是一整排的落地窗真是令人感到驚艷，這對於整天在診所內工作的牙醫師而言，這真是一個天堂！因為只要自然的一抬頭，就可以看到窗外中庭的綠樹，可以讓工作中的壓力與緊張感自然的舒緩；看診區是開放式的安排，平行的放置八張診療椅，並且前方有足夠的陪診空間，方便醫師與家長溝通，或是讓候診病患能 standby，這樣的設計方便順暢的處理大量病患。

診療台後方的供應區，主要是擺放看診器械及病歷資料，讓所有的治療過程都能有足夠的後援，供應區台面上的 Apple 桌上型電腦 iMac 也提供醫師在治療時所需要的資訊，舉凡術前、術中的照片記錄，治療過程的病患獨立 Keynote 檔案，特殊檢查的X光片或是 3D 立體電腦斷層掃描資料，都能毫無遺漏的完整呈現，還有還有，櫃台掛號資訊系統也整合在 iMac 裡面了，包括病患報到，等候時間，收費以及預約項目都清清楚楚，病患看診結束，助理也及時的將病歷記錄和照片輸入完成。當然囉，所有的工作站之間都是內部網路連線的，這樣，不管醫師走到哪裡，只要有電腦，配合診療過程，所有的病例資料都可以一覽無遺。

病患候診區

陪同的家長可以清楚的看到醫師進行的步驟，醫師也可以直接和家長溝通，創造出一個讓病人安心、家長放心的看診環境。

刷牙區

診所內設置多處刷牙區和鏡子，一方面增加診所明淨之感，更重要的是方便助理隨時可以檢查病患是否已經把牙齒刷乾淨。需要時則立刻可以清潔，毋須等待。

貝多芬矯正中心-診療運作系統

貝多芬矯正最值得研究的，應該是它的診療運作系統。診所內的每日看診病患量非常大，而且每天到診所內支援的住院醫師及專科醫師組合都不相同，但是對於病患的處理卻都能依照標準作業流程，按步就班的貫徹張醫師為病人量身訂作的治療計畫，而且效率依然一流！這要歸功於精簡明瞭的病歷設計，不論病患的外觀、口內照片、主訴、基本資料、治療計畫、拔牙位置、特殊發現等，都整合在一張病歷紙上，一目了然！每位住院醫師只要看到病歷上的指示，依照標準操作方式完成每個病例每次的調整，不管是由誰操作，治療的結果都能成就完美。這表示，只要診斷正確，貝多芬矯正牙醫的標準作業流程如果複製到其他牙醫診所，每一位醫師都能如此輕鬆、快樂、有效率的完成矯正治療！

圖像式病歷

病歷第一頁是病患初診的圖像資料，病人的相關問題一目了然，亦方便醫師與病人間的溝通。

貝多芬矯正中心-牙科繼續教育

也許大家都會有疑問，住院醫師的訓練不是應該經過4~5年嗎？為什麼大家都能這麼快的進入狀況呢？我想答案應該是「標準訓練流程」。所有的住院醫師都需要經過張醫師的矯正基礎班、進階班的訓練，然後繼續在精修班中逐漸精進成熟。張醫師的教學活潑而且與門診同步，您很難看到萬年不變的教材幻燈片，因為張醫師自己一直在進步。我們會看到就在上個禮拜或是昨天門診中遇到的病例，及時的套入當天的課程主題，而且更令人驚奇的是，當天上完的課程，下午的門診病患裡就有同一類型的病例，真是現學現用零時差！

貝多芬矯正中心-國際化課程

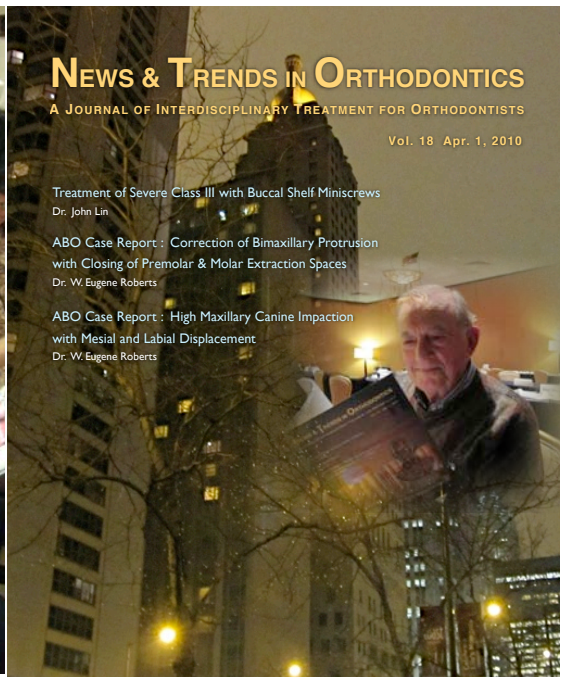
張醫師所設計的課程，不光適合國內醫師，就連國外的醫師也都踴躍報名參加 international workshop，每個梯次的報名都非常踴躍，學員們結業後都說還要再來參加，可見張醫師的課程魅力非常吸引人！張醫師也同時與國際接軌，國際間的演講邀約不斷，漸漸的成為另一個台灣之光！另外，每每只要有國際學者到台灣演講，張醫師有機會都會邀請他們參觀診所，張醫師會為他們簡報介紹診所的運作以及訓練課程，我們看到這些國際大師他們專注而且驚訝的表情，相信貝多芬牙醫在他們心中都留下了深刻的印象。

貝多芬矯正中心-出版專業刊物 News & Trends in Orthodontics

貝多芬矯正中心經過張醫師十幾年來的經營，深獲病人的信任與支持，除了提供矯正專業服務外，張醫師也致力於繼續教育的開辦以及國內外學術活動的交流。為了讓更多牙醫師能有一個實務交流平台，張醫師也出版了一份著重牙科實務經驗分享以及報導國外矯正新知的季刊「News & Trends in Orthodontics」，邀請國內外知名牙醫師分享他們臨床上的秘訣，並且透過此平台也讓貝多芬矯正的理念能夠透過教育，傳達給認同這份精神的醫師，並且對學習充滿熱忱，不斷精進。

（左）印尼國際班醫師認真在模型上練習植入迷你骨釘。

（右）最新一期雜誌News & Trends in Orthodontics，封面為Andrew Haas醫師正在閱讀NTO第17期。



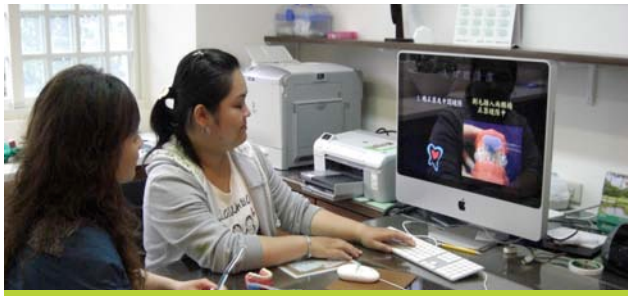
(左圖)資深助理正在電腦上進行新進助理訓練。

(右下圖)貝多芬醫師團隊。

貝多芬醫療團隊

貝多芬醫療團隊，當然不是由張醫師一個人單打獨鬥，因為我們面對的是廣泛的病人群，年齡從　0歲到99歲。沒關係，小的可以送到安徒生兒童牙醫，年長者有贋復專科解決您「無牙」的問題，牙周病及植牙方面有牙周專科醫師，其餘如口腔外科及根管治療、一般牙科都有專人負責，因為都是團隊內轉診，團隊醫師群共同來照顧，對於治療計畫的擬定及溝通較為直接且方便，對於病患的照顧當然是無微不至。

當然，有一群像貝多芬牙醫的全能助理是必要的。助理群也是貝多芬牙醫治療標準流程的重要關鍵！每一位新病人從進入診所開始，就由專業的公關組助理引導填寫基本資料，並介紹環境及諮詢流程，並且拍攝收集病患的口外及口內照片、取模。而在每日的門診治療流程，則由資深的助理組長來指揮，跟診助理引導回診病患就診前刷牙，看診前對病患的關心及詢問，器械準備好了之後由住院醫師先執行治療計畫，之後由張醫師檢查、微調。最後再由助理來指導病患口腔衛教，橡皮筋的佩戴、術後注意事項　....等等，然後結束回診流程。助理在病患及醫師之間，扮演重要的關鍵角色，就像鋼筋永遠需要水泥一樣，如果您診所的助理還沒能達到您的理想，請參加貝多芬舉辦的專業助理訓練班吧！



助理正在蘋果電腦上對病人進行初診諮詢。

安徒生兒童牙科 守護孩子口腔的健康

安徒生兒童牙科-緣起

在貝多芬矯正中心與一般牙科深耕新竹公學新村社區多年後，社區的里長跑來跟貝多芬院長張醫師反應說，社區的孩子牙齒痛都需要跑到市區才能得到專科的照顧，里長伯代表社區的家長們希望貝多芬也能在社區開一個專門為兒童設計的兒童牙科。因為聽到社區民眾的心聲，以及許多在貝多芬做矯正的家長也在反應一樣的需求， 2008年元旦我們開設了「安徒生兒童牙科」。安徒生的院長徐玉玲醫師表示，安徒生的理念是希望能塑造一個父母安心，孩子開心的看牙環境，提供永續優質的服務，照護不僅是孩子的口腔生理與心理的健康。

安徒生兒童牙科-環境介紹

診所以經典童話作家安徒生命名，將耳熟能詳的故事，如國王的新衣、賣火柴的小女孩、拇指姑娘融入診所的場景中，並結合童趣的想像信手塗鴉，留予親子間歡欣共處的童話氛圍。希望在寶貝的成長過程中，看牙不只是為了健康，也能是一件有趣、親子同樂的經驗。從依孩童身高設計不同高度的刷牙檯面，兒童專屬的廁所，到兒童專屬的遊戲區和閱讀區，安徒生從許多細節裡體現一個以兒童為中心的診療環境。

安徒生兒童牙科-長期完整保留兒童口腔資料

對兒童牙科而言，安徒生希望能提供的是長期照護，因為生長的過程中，除了在心理上漸漸與小朋友建立關係之外，在口腔顏面發育的部份更希望能透過口內外照片的收集與追蹤，充分掌握整體口腔健康，骨骼生長的情況。所以，為了達成這個目的，每位孩子的資料完整收集，電腦傳輸方式以及大量資訊的統合整理，安徒生都採用最先進的軟硬體技術，高畫質數位單眼相機與即時無線傳輸直接到個人病歷，以及蘋果電腦方便的雙作業系統界面功能，兼顧健保作業及儲存個人影音記錄等作業系統。一點一滴地保存所有小朋友的生長及看牙記錄，藉以提升學術及研究與服務品質。

安徒生兒童牙科-兒童衛教

預防勝於治療，尤其是幫年紀尚幼的孩子處理蛀牙更是一項挑戰父母與醫師心臟的浩大工程，有鑑於此，衛生健康教育應向下紮根，所以安徒生兒童牙科除了現在已有幼稚園定期來院檢查塗氟之外，希望還能定期為社區媽媽充實口腔知識以及提供一對一教學，幫助媽媽們從小幫助孩子養成正確的觀念與習慣。另外與孩子口腔健康有切身相關的領域，就是乳牙幹細胞的培養。有鑑於國內外此方面的研究發展已漸臻於成熟，聰明的爸媽除了自寶寶出生後打好口腔健康的基礎，更要懂得保存未來的本錢。

（左）依兒童身高所設計的高低刷牙台 （右）診療台頂上就是繽紛的花朵，讓孩子徜徉在童話的懷泡裡。

金牛頓藝術科技 牙醫科技教育中心

透過三階段的Keynote高效簡報課程，醫師學習製作一流的Keynote幻燈片簡報，並加強自身的簡報魅力與技巧。

成功的牙醫師們經常要面臨的兩難就是，想學的新技術這麼多，永遠抽不出足夠的時間讓我們好好坐下來，完整地聽一場演講或是從頭到尾讀完一本新書。金牛頓藝術科技將貝多芬精湛的臨床技術以及完整的教學系統，透過蘋果科技的硬體 iPod touch 以及軟體 Podcast，變成隨時隨地可以學習矯正的行動學習工具，已經掀起國際矯正界的一場學習旋風。

金牛頓藝術科技
行動學習iPod touch + 視訊課程

張慧男醫師率先研發將 Damon 高效矯正、迷你骨釘 OrthoBoneScrew 以及助理訓練這三種屬性完全不同，但是又與牙醫師在職教育密切相關的課程，透過蘋果電腦內建的簡報軟體 Keynote，製作成以照片和影片為主的簡報檔案，再透過軟體本身內建的轉檔功能，將平時授課的電腦簡報內容轉化為視訊影片，並安裝在 iPod touch 或 iPad 裡。不論是已經上過課希望溫故知新，或是沒時間親自來上課的牙醫師，都可以透過反覆觀看這些包含清楚分解動作的視訊影片，來增強高效學習的效果。由於 iPod 視訊課程是完全數位化的內容，也方便日後任何的修改和更新，所以完全不用擔心一旦有新的修正或改變，過去已經購買的珍貴資料就變成明日要被淘汰過期的垃圾。

金牛頓藝術科技
教學利器蘋果電腦+Keynote

金牛頓除了提供牙科專業視訊課程外，也負責設計、規劃、維護貝多芬牙醫團隊的教學資訊環境。舉例來說，日前台大張心 涪主任帶著目前仍在美國接受矯正專科訓練，正好回台休假的女婿來參觀貝多芬。診所當天剛好有一個門診手術的個案，訓練有素的助理們有些協助醫師執行臨床上的步驟，有些則進行手術過程的攝影及錄影。待手術過程結束後，助理立刻就將手術的照片放入病人專屬的 Keynote 簡報檔案中，連同病人過去的病例照片，以及剛才的手術錄影畫面，一起整理在這個病人的電子病例檔案中。執刀的醫師則立刻在電腦銀幕上秀出這個病人的治療歷程，向病患及家屬說明治療的進程以及療效，之後則繼續利用這個案例與張醫師進行深度的專業個案討論。討論結束後立刻將這個案例的電子檔燒成光碟，讓張醫師和他的女婿可以帶回去做進一步的研究。

金牛頓藝術科技 牙科醫療器材研發

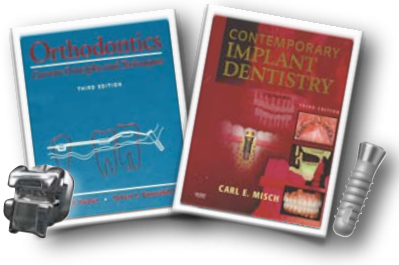
一般醫師可能認為這需要幾個實習醫師花上一個星期才能做出來的病例報告，利用適當的科技工具，這一切在短短的30分鐘內就全部完成了，不論是與病人，家屬溝通，訓練新進醫師、助理或與其他資深醫師進行專業討論，蘋果電腦加上 Keynote 的組合，讓進行個案討論和製作專業訓練教材，變得輕而易舉。再搭配 Keynote 最新加入的即時錄音功能，醫師教學講解的內容可以透過電腦內建的麥克風錄下來，透過影片轉檔的功能，新製作好的教學內容就可以放入 iPod，讓你立刻隨身帶著走。

金牛頓藝術科技-研發迷你骨釘OrthoBoneScrew

由貝多芬矯正中心的實務經驗出發，張慧男醫師領導開發矯正用的迷你骨釘，金牛頓的研發團隊包含國內外學界專家如 University of Indiana-Purdue 牙醫所所長 Dr. Eugene Roberts 教授，中央大學林上智教授，以及國內知名矯正醫師林錦榮醫師等。兩年來不斷改進，深受國內醫師的喜愛。透過矯正骨釘的使用，可以大大減少因為矯正需要拔牙的機率，傳統上某些特殊需要接受手術矯正的案例也可以透過骨釘獲得不錯的治療效果。

張慧男醫師與研發人員討論迷你螺絲的製造細節

貝多芬未來展望 -植牙中心



近年來，貝多芬病人結構逐漸由兒童青少年轉型趨向成人的比例越來越多，這意味著成人對美感的要求也愈發強烈，但這也是貝多芬的全新挑戰，因為面對成人的治療時，往往除了牙齒排列的問題需要矯治外，牙周病，大範圍的缺牙，舊有假牙補綴物汰舊以及矯正後的植牙或假牙補綴評估，重建。因此貝多芬有義務，也必須為成人提供矯正前中後完整的全面專業的治療建議與治療。

過去一般認為成人的牙科治療只需要兩個專科；牙周與補綴，但我們現處於強調 inter-disciplinary 科際間協同治療的時代，其中，矯正與植牙更是扮演了協同治療中最重要的兩個支柱，矯正提供了地基，植牙則是蓋房子的支柱，因此，貝多芬植牙中心的成立，是為了要提供病人更完善的治療，以及建構更完整的貝多芬醫療專業。

貝多芬體系的核心價值在於教育兩字，植牙中心也將落實教育當作成立的最高宗旨，透過課程的建立，會讓貝多芬各個專科的駐診醫師擁有相互溝通的舞台，張醫師相信，唯有在課程中出來報告給參與的學員分享，才會真正的認真整理自己的病例或是將自己的治療心得內化成有系統的 SOP。透過一次次的整理，相互討論，無形中能提升醫師的專業能力，醫療品質也相對提升。

貝多芬植牙中心即將於 2011 年成立，在今年，我們成立了植牙論壇，預先替矯正及植牙科際協同整合治療作暖身，也希望對學習有相同熱忱的醫師能夠加入我們，一起為提升醫療品質作努力。

金牛頓藝術科技

Authorized Reseller
授權經銷商

11/18
（四）

K1：簡報聖經 9~17：00

看過太多充滿複雜文字和圖表的幻燈片，聽過就忘了的演講嗎？Keynote系列一的演講要教你如何利用Keynote，製作出令人目眩神迷、印象深刻的電腦簡報。透過小班教學，貼身指導，務必讓你在八小時裡輕鬆掌握Keynote的簡報技巧。

學習重點：
1. Keynote操作入門
2. 演講常見十大謬誤
3. 視覺化技巧

12/16
（四）

K2：Dr. Kokich的十大演講秘訣 9~17：00

Keynote系列二為各位介紹世界牙醫界的天王講師Dr.Kokich的十大演講秘訣，讓您在進階的課程中更加掌握演講設計的關鍵原則，不但讓你知其然，更知其所然！

學習重點：
1. Dr. Kokich 十大演講祕訣
2. 準備演講的九個步驟
3. 多媒體影片剪輯

2011
1/13
（四）

K3：Jobs令人目眩神迷的五項演講技巧 9~17：00

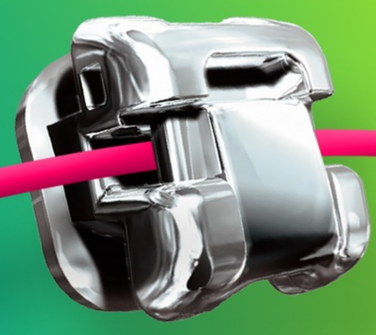
總結我們Keynote系列的系列三，我們要為大家逐步解析跨界演講大師Steve Jobs是如何說出打動人心、價值數十億美金的關鍵故事。透過逐步的分析拆解，要讓你也可以成為獨具魅力的演講人。

學習重點：
1. Steve Jobs的五項演講技巧
2. 幻燈片的設計概念
3. 幻燈片修改應用

報名專線：03-5735676 Hours：2-9 pm
上課地點：新竹市建中一路25號（交大華廈）2樓

情人與饗宴

Orthodontic Lecture 8/29



8/29

主辦單位｜高雄市牙醫師公會

協辦單位｜湧傑企業股份有限公司

主　　題｜邁入專科整合～貝多芬團隊六年回顧與經驗分享

時　　間｜99 年 8 月 29 日　星期日 9:00~17:00

地　　點｜高雄醫學大學 [啟川大樓 6 樓第一講堂] - 高雄市三民區自由一路100 號

報名專線｜湧傑 07-5361701、04-23058915　　公會 07-3350350

講　　師｜張慧男、蔡鎰隆、邱上珍、蘇筌瑋、蔡誼德、黃瓊嫻、吳致賢、蕭浩宜、李晃銘、徐玉玲

9:00 - 10:30	[張慧男] 現代必學的矯正技術	現今矯正治療結合 Damon System 與 Mini-Screw 幾乎無往不利，因此使用的技巧與細節您一定要知道！
10:50 - 12:30	[蔡鎰隆] 高品質矯正完工標準 [邱上珍] 矯正後的牙周完美狀態 [蘇筌瑋] 軟組織術後保養與衛教 [蔡誼德] 前牙美學面面觀 [黃瓊嫻] 矯正、植牙完美融合	[從 A 到 A+ 只有矯正行嗎？] 成人矯正不似青少年單純，必須結合牙周、補綴、植牙、審美等方向，來達成更完美的治療，在上午時刻，將由團隊醫師與您分享成人矯正上大家最常遇到的問題，如何讓患者在矯正治療完後更滿意，在牙周軟、硬組織與植體間更臻完美調和！
13:30 - 14:50	[吳致賢] 正顎手術案例分享 [蕭浩宜 & 李晃銘] 全口整合性牙科醫療的思考方向與治療計畫的訂定 [徐玉玲] 重新思考兒童矯正治療時機	[矯正跨科治療 Tough or Easy ?] 進入下午時刻，將帶您邁入更複雜、更深入的牙科治療，正顎手術、植牙、牙周控制，在複雜的病例中，各專科的治療步驟該如何協同調整？讓我們在重新檢視何時是最佳治療時機！
15:10 - 16:40	[張慧男] 矯正與植牙完美結合的關鍵報告	植牙區域往往有許多條件不完善的問題需要處理，如何利用矯正幫助空間、咬合及使用 Vista 讓軟組織更臻理想的條件，您不得不了解！
16:40 - 17:00	綜合討論	

News & Trends in Orthodontics

A Journal of Interdisciplinary Treatment for Orthodontists

現今的牙科治療是各科統合彙整的時代，協同矯正、植體、牙周、補綴讓治療成果臻於完美是我們追求的目標。

此期摘錄國際知名講師 Dr. Park and Dr. Cho 的 Functional and Esthetic Rehabilitation of Molar Teeth 與美國南加大牙周病科主任 Dr. Casey Chen（陳志光醫師）及美國南加大補綴權威 Dr. Baldwin Marchack 在 USC SYMPOSIUM 2010 IN TAIWAN 與大家分享的課程內容。

Functional and Esthetic Rehabilitation of Molar Teeth Missing with Super-Wide (Rescue™) Implant System: Two Case Reports

Dr. Young Chae Cho+, Dr. Kwang Bum Park++

Nowadays, the implant practice is becoming faster and less invasive with the development of surgical techniques comparing with those of 10 years before. And there was great improvements in prosthetic completeness on implant, especially on the maxillary anterior area. But in the posterior molar region, most dentists are concerning functions only, not the esthetics including emergence profiles from the gingiva. If we consider the complete rehabilitation of natural beauty and function, it's not difficult to think what we need to prepare-A super-wide diameter implant which has similar strength of molar teeth, an excellent emergence profile which can make a harmony with marginal gingiva and sufficient vestibular depth and keratinized gingiva. Here we have two typical cases to show the recent advances of implant dentistry in molar area.

Dr. Cho+ is a private practitioner dedicated in the esthetic implant treatment. He graduated from Cheon-Nam University dental school and is very active in teaching and lecturing as a faculty of the Midas Club-MINEC in Korea.

Dr. Park++ is the director of the Midas Club-MINEC which is an institute focusing on esthetics and implant education. He is also one of the founders of the MIR dental network and MegaGem Implant Co. in Korea.

Case ▶ 1

A 35 years old female patient visited our office with a chief complaint of broken crown. As shown in Fig 1-1 and 2, severe secondary caries was too severe to be restored with conventional dental treatment. On the panoramic radiograph, there was sufficient vertical height to place an implant over the mandibular canal (Fig 1-3) and it was

Fig. 1-1 and 2. *The first molar was broken at the cervical because of secondary caries. There was minimal inflammation on the gingiva around the tooth.*

supposed to have minimal loss of crestal bone around the decayed tooth. Considering her age and environmental conditions, it was decided to extract and place an implant immediately.

The tooth was carefully removed with split root technique and not to damage marginal bone (Fig 1-4). On the clinical examination of socket, there was no vertical bone loss around the crest. After careful degranulation of socket, a super-wide diameter implant (6.5 x 8.5mm Rescue implant, MegaGen Implant Co, Ltd, Korea) was placed following only two-step drilling technique: trephine4050 - 5.9mm final drill (Fig1-5). The fixture platform was placed about 3-4 mm below under the buccal marginal gingiva without opening flaps. On the healthy sockets, it can make sure the position of fixture platform 1mm under the crest. The fixture had excellent initial stability with minimized remaining socket defect which was filled with the autogenous bone harvested during trephine procedure. To make sure the complete healing of extraction socket with newly regenerated bone, it's important to make a tight sealing of gingiva against the healing abutment. So a 10mm wide healing abutment was chosen to minimize the movement of marginal gingiva and simple suture was made (Fig 1-6).

In most cases like this, 3 months is enough to start loading on implant because the size of defect is limited and grafted with autogenous bone (Fig 1-7 and 8). With the enlargement of fixture size, it can be more resistible with lateral forces during mastication. So the occlusal surface of molar tooth can be restored fully to give satisfactory masticatory efficiency.

After two months trial use of a provisional restoration, a customized post (Fig 1-9 and 10) was fabricated for a cementless crown (Fig 1-11 to 13). This specially prepared milling post should have 2 degree angulation at the upper half and 0 degree at the cervical half to give enough retention without cement. So it's not easy to fabricate and need to cooperate with excellent laboratory technicians, but it can give us excellent performances in function and esthetics and also we can have retrievability whenever we want. On

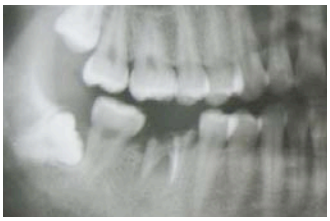


Fig. 1-3. *Panoramic radiograph showed enough vertical height over the mandibular canal.*

Fig. 1-4. *Careful extraction of decayed tooth is important for immediate implant placement.*

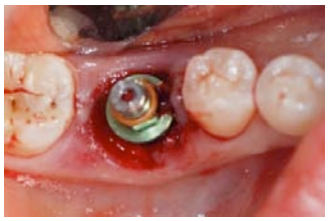


Fig. 1-5. *The super-wide (6.5 x 8.5mm) Rescue implant can be placed with only two step drilling.*

Fig. 1-6. *A 10mm wide healing abutment was connected to make tight sealing.*

Fig. 1-7 and 8. *A provisional restoration was connected to implant after 3 months. Look at the soft tissue contour around the fixture.*

Fig. 1-9 and 10. *A specially modified post was made. It has 2 degree angulation at the upper half and 0 degree at the cervical half.*

Fig. 1-11 and 13. *A PFM crown was fabricated on the customized post.*

Fig. 1-14. *The lingual view of crown. The slot on the crown makes the removal of prosthetics simple.*

Fig. 1-15. *The customized milling post was connected to implant in the patient's mouth.*

Fig. 1-16 and 17. *The crown was placed without cement; occlusal and buccal views.*

the lingual view of crown, there is a small slot which fits with a slot driver (Fig 1-14). This can make us to remove the crown when needed.

The specially customized post was delivered to the patient's mouth (Fig 1-15) and the screw hole was sealed with resin after 35 Ncm fixation with a torque driver. And the PFM crown was delivered just with press fit without any cement (Fig 16 and 17). As you can see in the pictures, the rehabilitation was obtained in function and esthetics. This became possible because of super-wide diameter implant.

As seen at the panoramic radiograph taken after treatment, the fixture length seems just like the length of natural tooth. Because of the enlargement of diameter, the surface areas for osseointegration was broadened. So the possibility of complication to touch the mandibular nerve was minimized with the Rescue implant system.

Case ▶ ❷

A 50 years old male patient visited our office with a chief complaint of masticatory difficulty. On the clinical and radiographic examination, the first and second molar were missed with a root tip in the bone. And the second premolar had a decayed cavity on the distal marginal ridge. The mandibular third molar was super-erupted due to long term missing of antagonistic

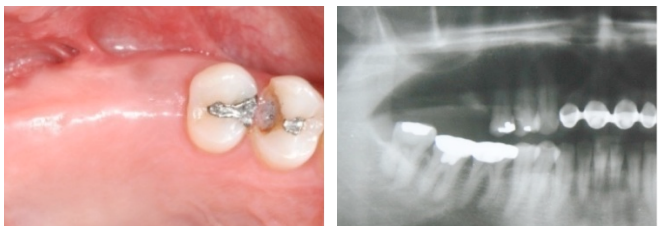


Fig. 2-1 and 2. *Clinical and panoramic radiograph before treatment. There was a root rest in the bone, but the ridge looked wide enough to place implants.*

tooth. After discussion about the treatment plan, it was decided to place two implants into the edentulous ridge. The ridge seemed to have wide enough ridge to place wide diameter implants.

For the placement of implant at multiple missing cases, it's recommended to use a surgical stent to guide the correct position of each implant.(Fig 2-3). After opening of the full thickness flap, the residual root was removed first. From the occlusal view of the ridge, the width seemed to have wide enough ridge to place super-wide diameter implants(Fig 2-4). After drilling for 6.5mm wide diameter fixture, the buccal wall of osteotomy socket was appeared quite thin (Fig 2-5). So it was decided to do minor bone graft on the buccal surface. Even it looks a little bit complicated compared with placing regular diameter fixtures and no bone graft, it's worth to do to make more ideal gingival contour and emergence profile. And when we use the special drilling technique utilizing a trephine, we can harvest valuable autogenous bone. So it's not difficult to do minor bone graft. A resorbable collagen

membrane was used to cover the bone graft and tensionless primary closure was made with releasing incision on the buccal periosteum (Fig .2-6~8).

Three months later, the second stage surgery was done to make openings throughout the gingiva. In this stage, we need to consider the amount of keratinized tissue on the buccal side of healing abutments. When we did releasing incision during primary closure on the first stage surgery, it's always better to do apically positioned flap to return the depth of vestibule to normal (Fig 2-10). To do this, a little bit lingual incision on the crest is recommended (Fig 2-9). Free gingival graft technique should be considered if the remaining keratinized tissue on the crest is less than 5mm, especially in mandibular posterior area.

Two weeks later from the second stage surgery, provisional restorations were delivered on the fixtures(Fig 2-11 and 12). This procedure was developed to do progressive loading in the beginning, but with the improvement of surface technology, the progressive loading lost its meaning. However, the provisionalization is still important to manage the soft tissue more ideally.

About two months later, final restorations were made with same concepts of specialized milling posts and cementless PFM bridge with Case 1 (Fig 13~18). With the placement of super-wide diameter implants, bone graft on the buccal aspect of implants and apically positioned flap surgery with sufficient amount of keratinized tissue, the complete rehabilitation was achieved in this case. From Fig 2-19 and 20, we can find excellent emergence profile and harmonious gingival outline with adjacent teeth. This would be the ultimate goal of dentistry, which can be obtained with specialized and advanced implant technologies.

Fig. 2-3. *Surgical stent in place.*

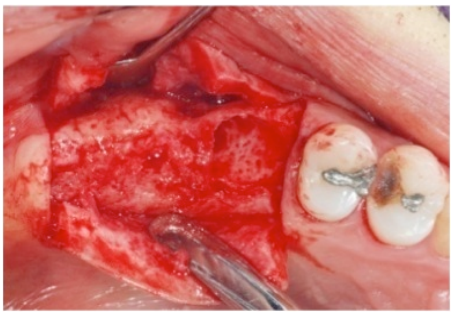


Fig. 2-4. *Full thickness flap was made and ridge seemed wide enough to place super-wide implants.*

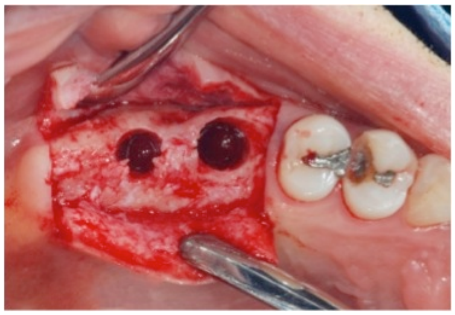
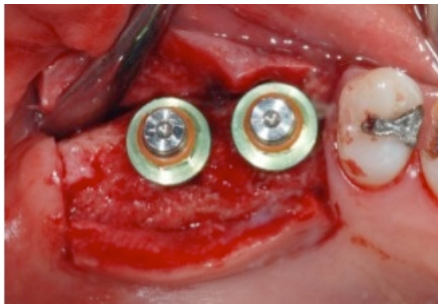


Fig. 2-5. *After drilling, the remaining buccal wall was looked quite thin. So it was decided to do minor bone graft.*



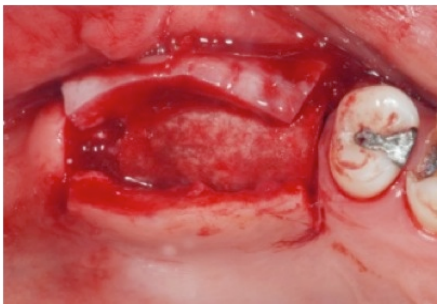


Fig. 2-6 and 7. *Two super-wide implants were placed with excellent initial stability. A collagen membrane covered on the autogenous bone graft.*

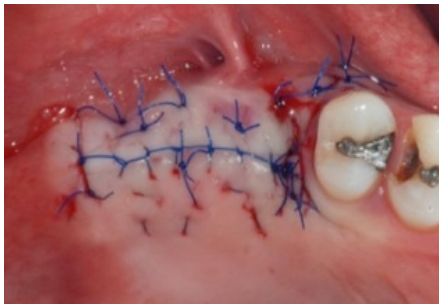


Fig. 2-8. *Primary closure was made following periosteal releasing incision on the buccal flap.*

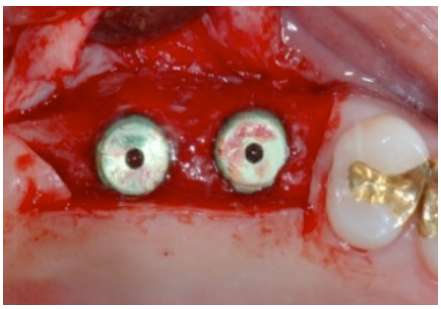


Fig. 2-9 and 10. *A lingual subcresal incision was made to do apically positioned flap at the second stage surgery. The amount of keratinized tissue on the buccal gingiva is important for esthetic and maintenance as well.*

Fig. 2-11. *Provisional restorations were connected to implants. This procedure is important for soft tissue conditioning.*

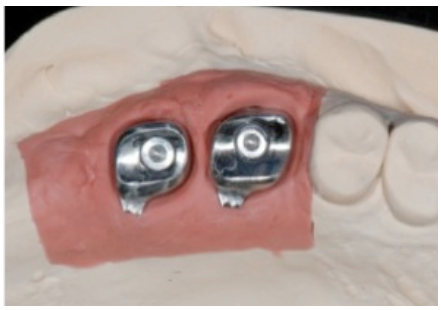


Fig. 2-13 and 14. *Special customized milling posts.*

Fig. 2-12. *Provisional restorations were connected to implants. This procedure is important for soft tissue conditioning.*

Fig. 2-15 and 18. *PRM crowns made on the milling posts. They have same slots on the lingual surfaces as Case 1.*

Fig. 2-19 and 20. *Final restorations in place in the mouth.*

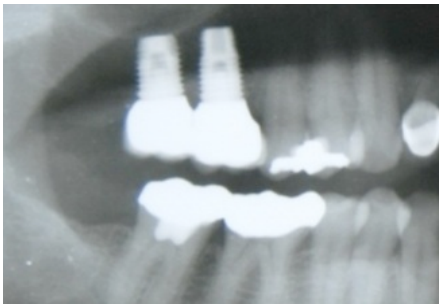


Fig. 2-21. *Panoramic radiograph taken after delivery of crowns.*

2010 Implant Forum

	日期 (W5)	Implant Forum 9:00 ~ 10:30				Interdisciplinary Treatment Planning 10:45 ~ 12:00
		臨床導論 主講者 張慧男	臨床祕訣	病例分析	講師	精選文章分析
1	02/26	臨床導論	無菌觀念，手術基本觀念 植體設計與贋復組件介紹		邱上珍	Inter-relationship of Ortho, Perio, Restorative Dentistry
2	03/26	臨床導論	引導骨再生及齒槽骨保存		王肖龍	Fundamental Treatment Planning
3	04/30	特別演講 講師 黃怡豪醫師 / 主持人 張慧男				
4	05/28	臨床導論	植體的矯正考量		黃瓊嫻	Forced Eruption
5	06/25	微創手術操作	植體的軟組織處理		歐亦焜	Ant. Esthetic 1
6	07/23	特別演講 講師 謝尚廷醫師 王國華醫師 / 主持人 張慧男				
7	08/27	臨床導論	前牙美觀區的植體考量		王肖龍	Ant. Esthetic 2
8	09/24	臨床導論	上顎竇升高術		邱上珍	Inter-implant Papilla Consideration Peri-implant Architecture Preservation
9	10/29	特別演講 講師 吳碧礽醫師 / 主持人 張慧男				特別演講 講師 楊家華醫師 / 主持人 張慧男
10	11/26	臨床導論	3DCT應用與手術模板製作		歐亦焜	Save Tooth ! or Ext ?
11	12/31	臨床導論	六個植牙補綴物常見的盲點		特別來賓	Establish Occlusal Scheme

實作課程 : 1. 植牙模型操作 2. 微創手術操作 (依學員需求另行安排時段， 費用另計)

植牙論壇主要講師群

歐亦焜，王肖龍，黃瓊嫻，邱上珍 醫師
補綴顧問 : 方景亮 主任

參考書籍

Interdisciplinary Treatment Planning
Contemporary Implant Dentistry 3rd, Misch

特別外賓


吳碧礽醫師


王國華醫師


謝尚廷醫師


楊家華醫師


黃怡豪醫師

固定式美觀植體支持性贋復補綴物

Fixed Esthetic Implant Supported Restorations

Dr. Baldwin W Marchack

Dr. Baldwin W Marchack
Instructor, USC Implant Training Program in Taiwan

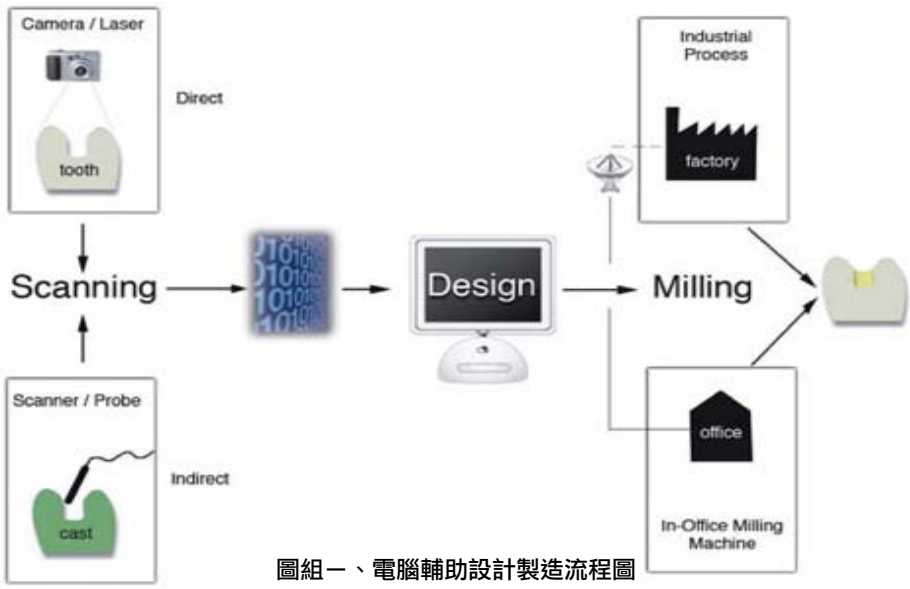
序言

Dr. Marchack 是現今全世界氧化鋯 (Zirconia) 的專家，目前其臨床所有的植牙贋復 (全口或局部)，都是用CAD/CAM (Computer-aided design and computer-aided manufacturing) 電腦輔助設計製造 (圖組一) 完成。

歷史演進

牙科利用電腦輔助設計製造補綴物其實不是新技術。歐洲在1987年(Cerec 1) 開始發展，用於局部補綴物的直接復形，但精密性及製作進度緩慢。1994年發展為Cerec 2，2000年Cerec 3則開始在北美盛行，2009年推出的Cerec AC 在使用上更簡便，並可與不同陶瓷系統相容。Cerec系統雖有眾多不同的競爭者如Celay系統、Procera系統、Cercon系統及3M Lava系統等等。Dr. Marchack 偏好Cerec系統，但其限制是只建議製作自然牙之單一牙冠。

Dr. Marchack 自1997年起製作了超過600顆氧化鋁全瓷冠 (Alumina coping crown)。但氧化鋁全瓷冠的高失敗率如陶瓷破裂，甚至有時是內冠斷裂的災難性失敗，令他積極苦思替代性材料。1999年他到瑞士拜訪 CAD/CAM 先驅 Dr. Ueli Grunder，開始接觸牙用電腦輔助設計製造補綴物。自2001年起迄今已製作



圖組一、電腦輔助設計製造流程圖

廖文堅 醫師
三軍總醫院口腔贋復科主任
南加大植牙繼續教育訓練課程口譯

了超過1600顆氧化鋯全瓷冠 (Zirconia coping crown)。從氧化鋁全瓷冠轉換使用氧化鋯全瓷冠，不再有氧化鋯內冠斷裂的經驗，但仍時有陶瓷破損 (Chipping) 的病例回診。因此，早期針對陶瓷氧化鋯間的鍵結失敗解決方式有以下:

1. 防止氧化鋯晶相由正方 (Tetragonal) 相轉為單斜 (Monoclinic) 相變化造成材料裂縫產生：不噴砂 (Sandblasting) 及研磨 (Grinding) 氧化鋯表面、並以蒸汽清潔 (Steam cleaning) 去除氧化鋯表面油質及污染、再以陶瓷烤爐烘烤 (Firing:1000°C, 10min) 熱處理氧化鋯表面達到清潔及去除應力的目的。
2. 仔細校正陶瓷烤爐溫度 (低10°C的差距可降低陶瓷30%強度)：為此原因，Dr. Marchack 甚至換了新烤爐，但陶瓷斷片情形仍然發生。
3. 陶瓷與氧化鋯間熱膨脹係數差異：燒瓷時必須緩慢升溫及降溫。特別若是降溫速率不正確，會有殘存應力形成，造成陶瓷在使用時斷裂。

Dr. Marchack 做了許多改進但仍有陶瓷斷片情形仍然發生、特別是在功能性咬頭及主要受力咬點處 (圖組二)。

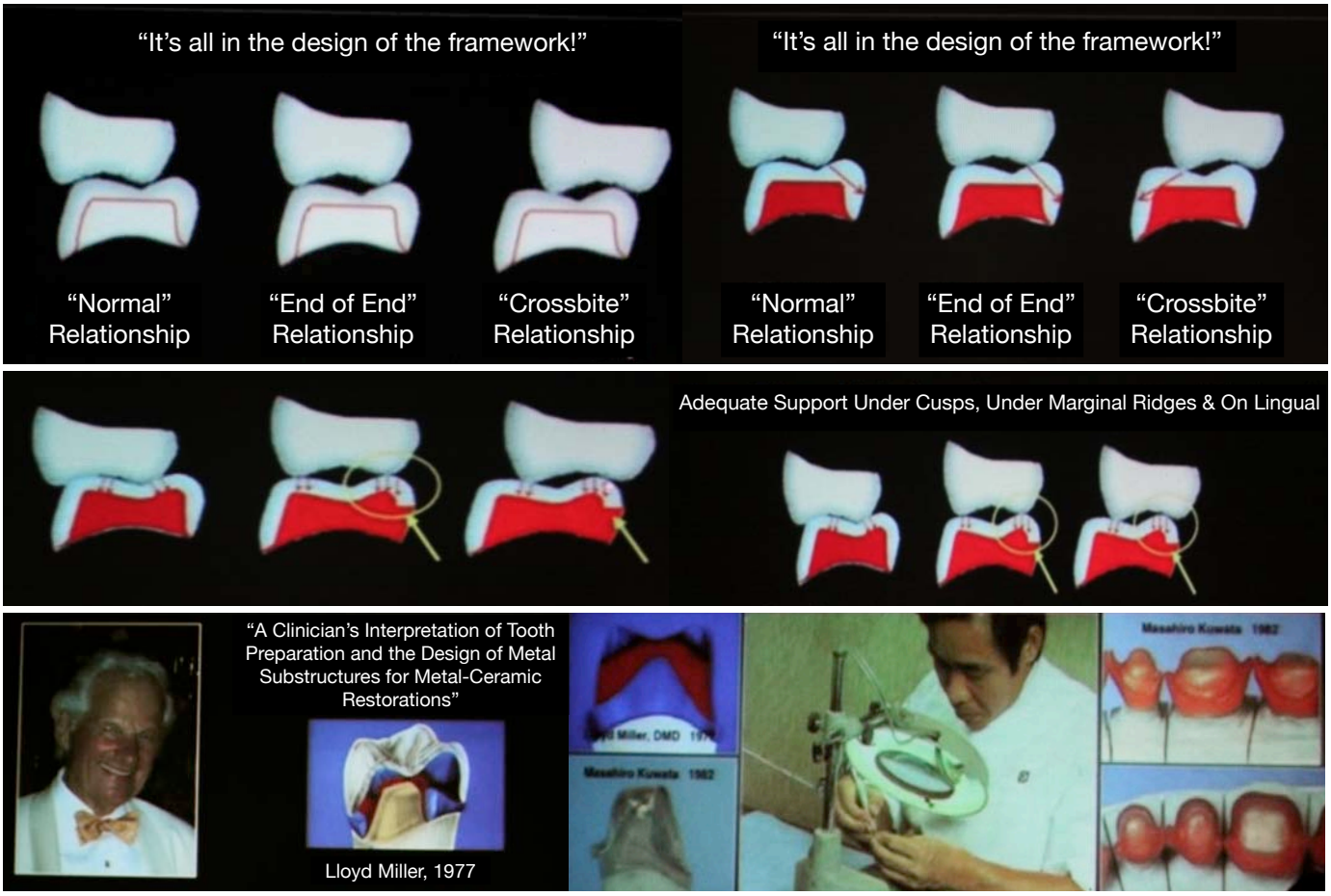
日本陶瓷金屬大師Dr. Masahiro Kuwata認為關鍵處乃是內冠 (Coping) 設計問題。陶瓷材料本身抗壓不抗拉，參考陶瓷金屬大師Dr. Lloyd Miller (1977) 及Dr. Masahiro Kuwata (1993) 的設計關鍵 (圖組三)。

1. 內冠設計：Interproximal bulk, basic metal core, lingual bulk for shear resistance, bulk beneath cusp limits shear forces and increase compressive resistance。
2. 不同咬合形式：Normal, end to end and crossbite occlusion。
3. 有不同內冠設計支持陶瓷抗壓：Adequate support under cusps, under marginal ridges & on lingual porcelain subjected to compressive stresses only。

單牙冠設計 (Marchack coping)

Dr. Marchack 針對內冠設計做了改進 (圖組四及五)，牙齒肩台緣 (Shoulder margin) 修形，蠟型製作後回削 (Cut back)，以提供陶瓷足夠厚度 (Horizontal proximal and palatal shoulders, with rounded internal and external line angles)。再利用製作好的蠟型研磨出氧化鋯內冠 (Milled coping following form of wax pattern)。製作好的氧化鋯內冠必須有咬合面斜坡及高顎側水平接合關節以

圖組二、氧化鋯全瓷冠功能性咬頭及主要受力咬點處陶瓷斷裂圖



圖組三、氧化鋯全瓷冠功能性咬頭及主要受力咬點處陶瓷斷裂圖

支持陶瓷 (occlusal slopes and high palatal butt joint designed for porcelain support)。如此的氧化鋯內冠設計大大提升了臨床成功率。

Dr. Marchack研究團隊將其研究心得投稿至贋復學期刊 (JPD)，2008年登出後，CAD/CAM軟體公司群起效尤(圖組六)，也就是氧化鋯內冠必須有咬合面斜坡及高顎側水平接合關節以支持陶瓷的內冠支架設計獲得認同，稱之為Marchack's coping絕不為過。

氧化鋯全瓷牙橋設計

當氧化鋯全瓷牙冠獲得將近100%成功率後，他開始製作氧化鋯全瓷牙橋 (Nobel Biocare Procera zirconia FPDs)。以臨床上20組病例作實驗，三到四單位後牙橋及三到六單位前牙橋，所有修磨牙都是肩台緣並用玻璃離子黏著劑黏合。全瓷牙橋成功與否的評斷標準是有無斷裂、邊緣貼合否、有無再齲齒、內冠是否斷裂等。得

▲ **圖組四 (上排四張)：氧化鋯全瓷牙冠** (Dr. Marchack's zirconia-based ceramic) **(模型、蠟型、氧化鋯冠心、氧化鋯全瓷冠咬合面觀、氧化鋯全瓷冠舌側觀)**

▼ **圖組五 (下排四張)：氧化鋯全瓷牙冠近心側，舌側及遠心側觀**

到的結果是連接體 (connector) 處若參考日本陶瓷金屬大師Mr. Makoto Yamamoto 金屬陶瓷牙橋連接體設計 (圖組七)，連接體加寬，其實就是把金屬部份改成氧化鋯，則成功率可達100%。

至於氧化鋯與琺瑯質的磨耗，參考 Tambra團隊2003年的報告，拋光過的氧化鋯是0.04mm，未拋光過的氧化鋯0.044mm，金合金則是0.024mm，此磨耗值是Dr. Marchack 可接受的。氧化鋯專家Dr. Ken Malament提出圓周應力 (Hoop stresses) 也是造成傳統金屬陶瓷冠齒頸部三分之一陶瓷破裂的因素之一。

全氧化鋯牙冠 (All-in-Z® Crown) (圖八、九、十)

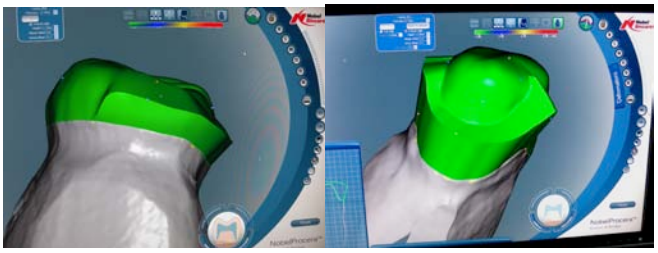
有了可接受的氧化鋯與琺瑯質間的磨耗值及避免圓周應力影響。在口內主要受力區 (第二大臼齒)，Dr. Marchack設計的全氧化鋯牙冠—不會斷裂、貼合性佳、較金屬牙美觀、低磨耗率等都是其優點。

修正型氧化鋯陶瓷牙冠 (Modified All-in-Z® Crown) (圖組十一)

往前延伸到可見區或美觀區，Dr. Marchack設計了僅在頰側非功能性側烤瓷達到美觀要求，其餘部份仍是氧化鋯為主體，這樣修正型氧化鋯陶瓷牙冠可兼固美觀及耐用。

全口氧化鋯植體牙橋 (All-in-Z® Implant Bridge) (圖組十二、十三、十四、十五)

從單牙冠到牙橋 (局部)，從自然牙到全口植牙 (全口)，Dr. Marchack進一步利用電腦輔助設計製造精密補綴物。精確取模後，模型轉移至咬合器上，利用樹脂將最終贋復體雕塑成形，再回削以提供陶瓷足夠厚度，利用電腦輔助掃描樹脂成型，研磨出氧化鋯一體成型支架。口內試戴確定支架貼合無誤後，比色、烤瓷、上



圖組六、Nobel Biocare CAD/CAM 軟體設計氧化鋯內冠部份

圖組七、氧化鋯全瓷牙橋舌側及連接體處設計

圖八、Dr. Marchack's All-in-Z® Crown (全氧化鋯牙冠，下顎第二大臼齒)

圖組九、Dr. Marchack's All-in-Z® Crown (全氧化鋯牙冠，下顎第二大臼齒) (模型照片)

釉，最後再口內完成固定可撤式全口氧化鋯植體牙橋 (fixed detachable All-in-Z® Implant Bridge)。

Dr. Marchack指導的醫師 Dr. Shoko Sato (Dr. Masatoshi Sato女兒) 參加2010年二月美國口腔贋復學年會海報競賽，以"Fabrication of milled zirconia screw-retained fixed maxillary and mandibular complete dentures: clinical and laboratory procedures"贏得首獎。

贏得首獎的一週後，該病例病患則因陶瓷破裂回診，證明成功者不見得一直處在順境，但是Dr. Marchack仍大方地提出此患者陶瓷破裂的補救方式：贋復體完成後，若被外力或本身是磨牙患者導致的陶瓷破裂，不須修補，只要保存原掃描樹脂成型紀錄，皆可重新研磨出氧化鋯一體成型新支架，再製做完成新固定可撤式全口氧化鋯植體牙橋，快速解決病患的問題。一開始設計就考慮增加氧化鋯體積，減少陶瓷， 是必要的。

利用電腦輔助設計製造精密固定可撤式全口氧化鋯植體牙橋 (All-in-Z® Implant Bridge)，可提供的優點有精確、美觀、可撤、不會斷裂。因此，利用電腦輔助設計製造精密氧化鋯贋復體，不是未來贋復補綴的趨勢，而是現在就要採行的治療方式。

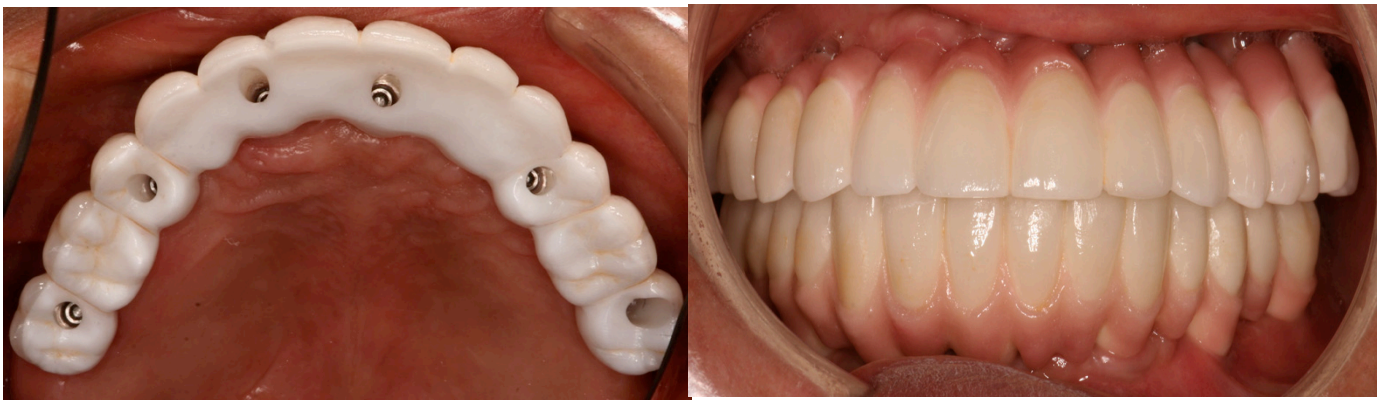
圖組十、Dr. Marchack's All-in-Z® Crown (全氧化鋯牙冠，下顎第二大臼齒)
(口內照片)

圖組十一、Dr. Marchack's Modified All-in-Z® Crown
(修正型全氧化鋯全瓷冠，上顎第一大臼齒僅頰側非功能性側烤瓷)

圖組十二、 Dr. Marchack's All-in-Z® Implant Bridge 全口植牙贋復體設計
(resin pattern, cut-back for zirconia framework, resin framework scanned)

圖組十三、 All-in-Z® Implant Bridge 氧化鋯支架頰側及咬合面觀

圖組十四、 All-in-Z® Implant Bridge 氧化鋯支架頰側烤牙齒瓷與齒頸部瓷及氧化鋯咬合面



圖組十五、 All-in-Z® Implant Bridge 氧化鋯全瓷牙橋上顎咬合面觀與上下顎咬合觀

References

1. Single unit CAD/CAM restorations: a literature review. Freedman M, Quinn F, O'Sullivan M. JIDA 2007;53(1):38-45.
2. Clinical complications in fixed prosthodontics. Goodacre CJ, Bernal G, Rungcharassaeng K, Kan JYK. JPD 2003;90:31-41.
3. Wear of enamel opposing YPSZ Zirconia core material with two surface finishes.Tambra TR, Razzoog ME, Lang BR, Wang RF, Lang BE. AADR 2003, Abstract #915
4. Precision of CNC-milled titanium frameworks for implant treatment in the edentulous jaw.
5. Jemt T, Back T, Petersson A. Int J Prosthodont 1999;12(3):209-215.
6. Comparison of precision of fit between cast and CNC-milled titanium implant frameworks for the edentulous mandible. Ortorp A, Jemt T, Back T, Jalevik T. Int J Prosthodont 2003;16(2):194-200.
7. Fit of implant frameworks: an in vitro comparison between two fabrication techniques. Takahashi T, Gunne J. JPD 2003;89(3):258-260.
8. Maxillary zirconia implant fixed partial dentures opposing an acrylic resin implant fixed complete denture. A two year clinical report. Chang PP, Hegenbarth EA, Lang LA. JPD 2007;97:321-330.
9. Complete arch implant rehabilitation using subtractive rapid prototyping and porcelain fused to zirconia prosthesis: A clinical report. Papaspyridakos P, Kunal L. JPD 2008;100:185-172.
10. Customization of milled zirconia copings for all-ceramic crowns: A clinical report. Marchack BW, Futatsuki Y, Marchack CB, White SN. JPD 2008;99:169-173.

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USC UNIVERSITY OF SOUTHERN CALIFORNIA

USC Comprehensive Surgical and Restorative Implant Training Program in Taiwan

南加大植牙繼續教育訓練課程

2010

時間: 7/10~11, 2010 (六，日 - 演講與實作workshop) • 8/22, 2010 (日 - 視訊教學) • 9/4~5, 2010 (六，日 - 演講與實作workshop) • 10/17, 2010 (日 - 視訊教學) • 11/13~14, 2010 (六，日 - 演講與實作workshop) • 12/19, 2010 (日 - 視訊教學) • 1/25~1/26, 2011 (二，三 - 美國演講) • 1/27, 2011 (四 - 美國可選修的 cadaver workshop) • 1/28~29, 2011 (五，六 - 美國演講，畢業典禮) • 1/30, 2011 (日 - 美國可選修的 cadaver workshop) • 9:00am - 6:00pm

地點: 福華國際文教會館. 台北市新生南路三段30號.
Wilshire Grand Hotel. 930 Wilshire Blvd., Los Angeles, CA 90017.

南加大講員陣容

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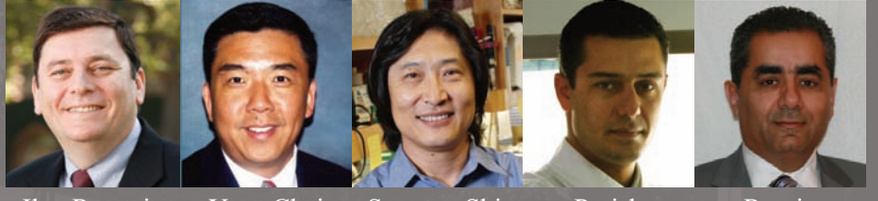

Ilan Rotstein | Yang Chai | Songtao Shi | Parish Sedghizadeh | Ramin Mahallati

演講嘉賓: Stephen Wallace ★ Lyndon Cooper ★ Fernando Rojas-Vizcaya ★ Clark Stanford

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Microbiological and Clinical Aspects in Peri-implant Diseases

Dr. Casey Chen

植體周圍炎 (Peri-implantitis) 向來在臨床植牙治療中，不僅是植牙醫師的夢魘亦是造成植體失敗的主要原因。一般植牙系統都號稱五到十年的存活率接近95~98%，但是無法告訴我們真正維持健康的植體比例為何？這次南加大牙周病科陳志光主任，針對臨床種植醫師面對如此棘手的問題，從植體和自然牙的解剖結構差異、牙周病致病因及機轉、牙周炎和植體周圍炎的發生率、植體周圍疾病之治療程序以及2000年 Dr. Lang 針對植體設計了一套漸進阻斷式支持性療法～**CIST: Cumulative interceptive supportive therapy**，配合臨床案例，告訴我們正確的診斷及治療方法。

20 Contents:

(1) Peri-implant disease and periodontal disease 的定義
(2) Implant-oral tissue interface 的解剖結構
(3) Biologic width
(4) Peri-mucositis and peri-implantitis 的鑑別診斷
(5) Early implant bone loss after functional loading
(6) Prevalence of periodontitis in the US
(7) Prevalence of peri-implant disease
(8) Risk indicators for peri-implant disease
(9) Microbial etiology of periodontitis
(10) Formation of pathogenic plaque in pockets
(11) Periodontal bacteria in health and periodontitis
(12) Periodontal bacteria associated with teeth and dental implant
(13) Microbial etiology of peri-implantitis
(14) Peri-implantitis and periodontitis are biofilm-associated infection
(15) Implant surface as a factor for the progression of peri-implantitis
(16) Treatment of peri-implantitis
(17) CIST: Cumulative interceptive supportive therapy
(18) Decontamination protocol
(19) Regenerative procedures
(20) Summary

Dr. Casey Chen
Instructor, USC Implant Training Program in Taiwan

依據以上演講的20項內容 (Contents) 我們將其分成四個段落加以介紹及討論：

王肖龍 醫師
全方位牙醫診所
貝多芬矯正課程暨植牙論壇講師
南加大植牙繼續教育訓練課程口譯

一. 牙周及植體結構及疾病演變過程

1. Peri-implant disease and periodontal disease 的定義

植體周圍黏膜炎 (Peri-mucositis) 是植體周圍口腔黏膜發炎的現象，是可逆且能恢復的；植體周圍炎 (Peri-implantitis) 不僅是黏膜發炎，更進一步會造成支持骨質的流失; 牙周疾病則是起始於牙齦炎 (Gingivitis) 後，更進一步有牙周炎 (Periodontitis) 的形成，後者亦有支持骨質的流失。然而牙周組織發炎，大多在患者的初期較易察覺，諸如刷牙流血 (Bleeding on brushing) 或是探測流血 (BOP: Bleeding on probing)；這些都是早期牙齦組織發炎的臨床現象，但是往往在診斷植體周圍黏膜炎時，BOP的情況較不明顯。有時囊袋探測深度已達 5~6 mm，卻未見有像牙周炎形成前可供參考的預警機制，所以造成臨床上錯失植體周圍炎診斷的先機！原因就是自然牙周組織和植體周圍組織，先天上解剖結構不同所造成！

2. Implant-oral tissue interface 的解剖結構

相較於自然牙，植體周圍組織有較多平行於植體表面的膠原纖維 (Fig.1)，但因為缺乏垂直於牙骨質 (cementum) 的膠原纖維，所以對於外力 (例如牙周探針探測 periodontal probing) 的抵抗性也較差 (Fig. 2)。尤其，當組織發炎時，更容易穿過連接上皮 (Junctional epithelium) 侵入結締組織 (Connective tissue) 中，所以對於細菌感染的防禦能力也較弱。

3. Biologic width 生物寬度的範圍

植體周圍組織形成的生物寬度相較於自然牙，同樣分成連接上皮和結締組織兩部份；自然牙由平均 0.97 mm 的連接上皮加上 1.07 mm 的結締組織形成約 2.04 mm 的生物寬度。在1996年 Berglundh & Lindhe 實驗當中由手術方式建立 4 mm 及 2 mm 厚度的牙齦組織傷口包覆於植體 (Fig 3a)，經過六個月，癒合兩種方式最後皆形成相似的生物寬度結構，由 2.0 mm 的連接上皮加上 1.3 ~ 1.8 mm 的結締組織形成約 3.3 ~ 4.0 mm 的生物寬度。其中 2 mm 傷口不足的軟組織結構，是由骨質往根尖方向吸收及軟組織往下生長，才有足夠的生物寬度形成 (Fig 3b)。

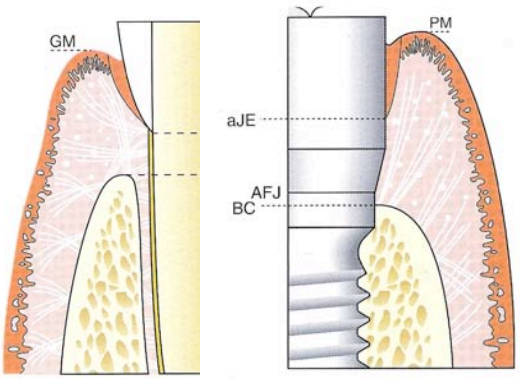


Fig 1.

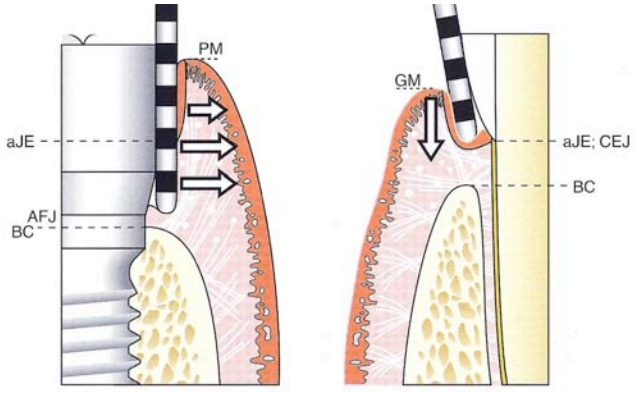


Fig 2.

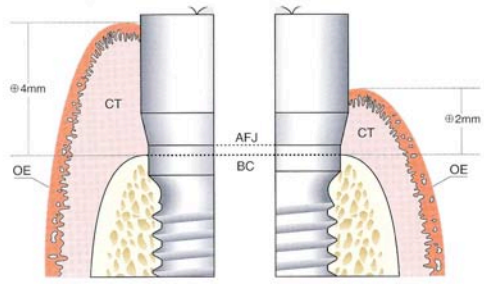


Fig 3a.

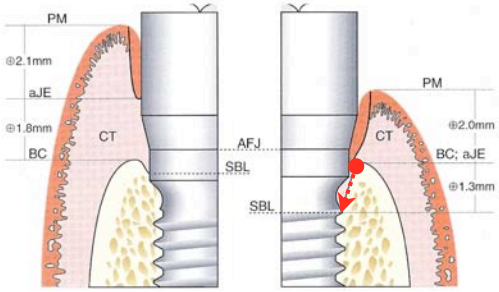


Fig 3b.

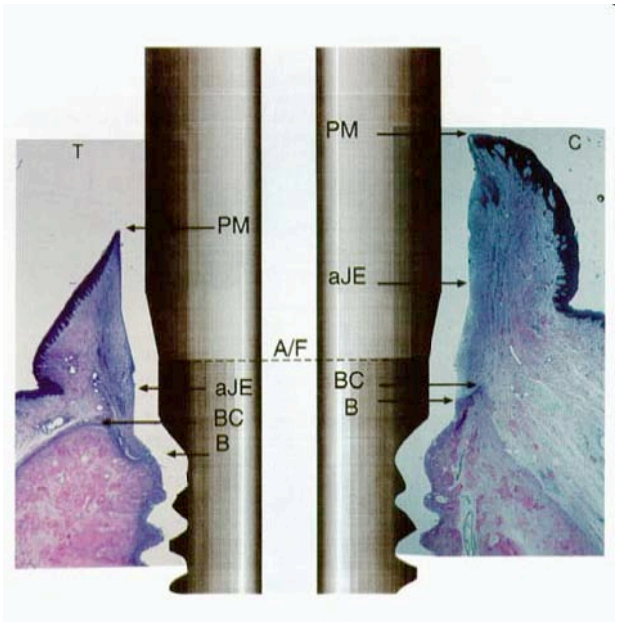


Fig 4. Fig 3a, b 之組織切片圖

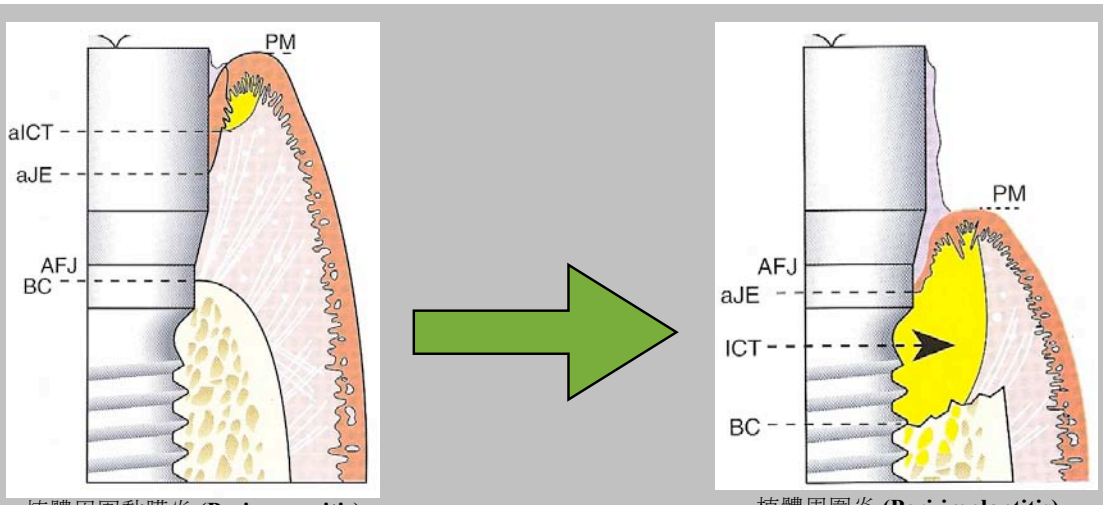


Fig 5.

4. Peri-mucositis and peri-implantitis 的鑑別診斷

植體周圍黏膜炎 (Peri-mucositis) 和植體周圍炎 (Peri-implantitis) 最重要的區別，在於植體周圍支持骨質是否吸收；然而 1998 年 Mombelli 及 Lang 定義二階植牙系統，因為microgap，在術後頭一年的骨吸收量，在 0.9 ~ 1.6 mm 範圍以內是可接受的；但若是臨床上發現X-ray有異常變化，囊袋探測深度 (PPD) 加深，牙齦發炎及探測時流血或有化膿現象，就需懷疑發生植體周圍炎，因即刻加以治療 (Fig 5)。

植體周邊組織破壞吸收會隨著發炎浸潤結締組織 ICT (Infiltrated connective tissue) （黃色區域）的範圍擴大而日益加劇，所以植體周圍黏膜炎 (Peri-mucositis) 最後演變成植體周圍炎 (Peri-implantitis)。

5. Early implant bone loss after functional loading

早期植體周圍骨質流失的原因，主要是產生 Occlusal overloading 及 Peri-implantitis，當然這是可以預防及調整的；但是在植體 AFJ (Abutment fixture junction) 形成的microgap (Fig 6)，卻是因不同廠商設計而無可避免的，所以設計植體的生物寬度起始點就相對重要了。

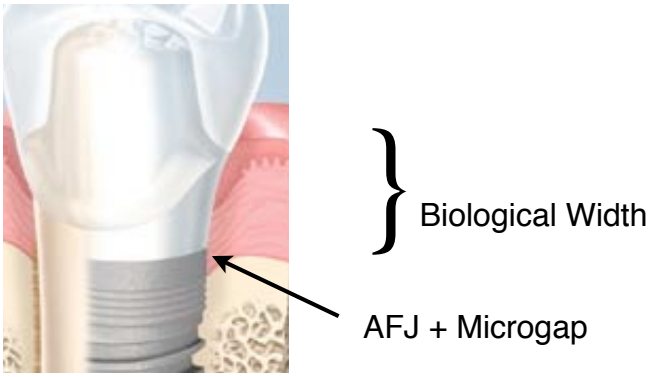


Fig 6.

二. 牙周炎及植體周圍炎的發生率

6. Prevalence of periodontitis in the US

根據 2000 年五月份 Oral Health in America: A report of the Surgeon General 的報告顯示全美國 25 ~ 34 歲中年族群當中，按照不同嚴重度而分，最輕微 (牙周附連喪失 2 mm) 且最少有一處發生的牙周炎比例已經高達 60% 的狀況 (Fig 7)，表示這個族群在使用牙齒超過一二十年之後，牙周炎的產生勢不可免。且隨著年齡層增高亦有愈發增加的趨勢，依此推論自然在使用植牙一段時間後植體周圍炎的發生更是不忽視的！

7. Prevalence of peri-implant disease

2002 年 Dr. Berglund 已經提出植體喪失的比例：首先未受力之前約有 2 ~ 3 % 的發生率，受力之後亦有同比例植體喪失，接下來仍然有約 5 ~ 8 % 植體產生植體周圍炎。乍聽之下似乎還算理想，但是實際情況可能是被低估的。近年的研究又顯示這點， 2006年 Roos-Jansaher 針對218 實驗對象 999 支植體，使用 9~14 年後的植體周圍黏膜炎 (Peri-mucositis) 作調查；2005年 Fransoon 亦針對 662 位實驗對象共 3413 支，使用超過 5 年植體的植體周圍炎 (Peri-implantitis) 進行研究；結果發現約有八成以上受測者有 Peri-implant mucositis 的現象，全部植體當中約有五成發生機率；而就 Peri-implantitis 的結果發現約有三成受測者有此現象，全部植體當中約有四成發生機率 (Fig 8)。

就牙周病而言，牙周炎從發生到造成患者的困擾及麻煩可能需要 25 年左右；然而就植牙的使用而言，並無大量及長期追蹤調查，所以 Peri-implantitis 的發生率應該遠高於現有的研究報告!

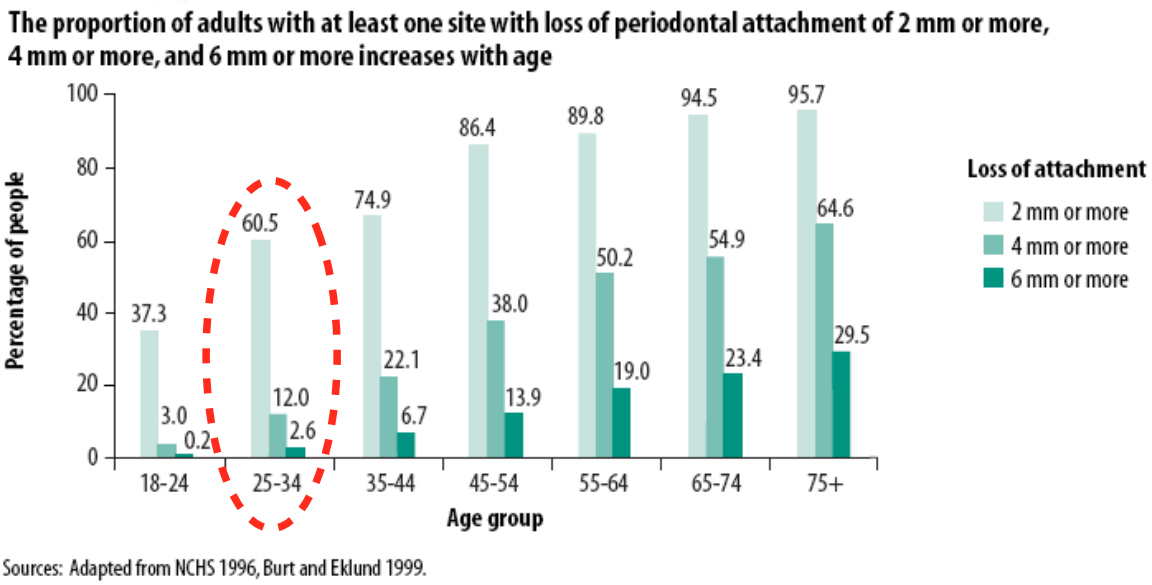

The proportion of adults with at least one site with loss of periodontal attachment of 2 mm or more, 4 mm or more, and 6 mm or more increases with age
Percentage of people
100
80
60
40
20
0
37.3
3.0
0.2
60.5
12.0
2.6
74.9
22.1
6.7
86.4
38.0
13.9
89.8
50.2
19.0
94.5
54.9
23.4
95.7
64.6
29.5
18-24
25-34
35-44
45-54
55-64
65-74
75+
Age group
Loss of attachment
2 mm or more
4 mm or more
6 mm or more
Sources: Adapted from NCHS 1996, Burt and Eklund 1999.

Fig 7.

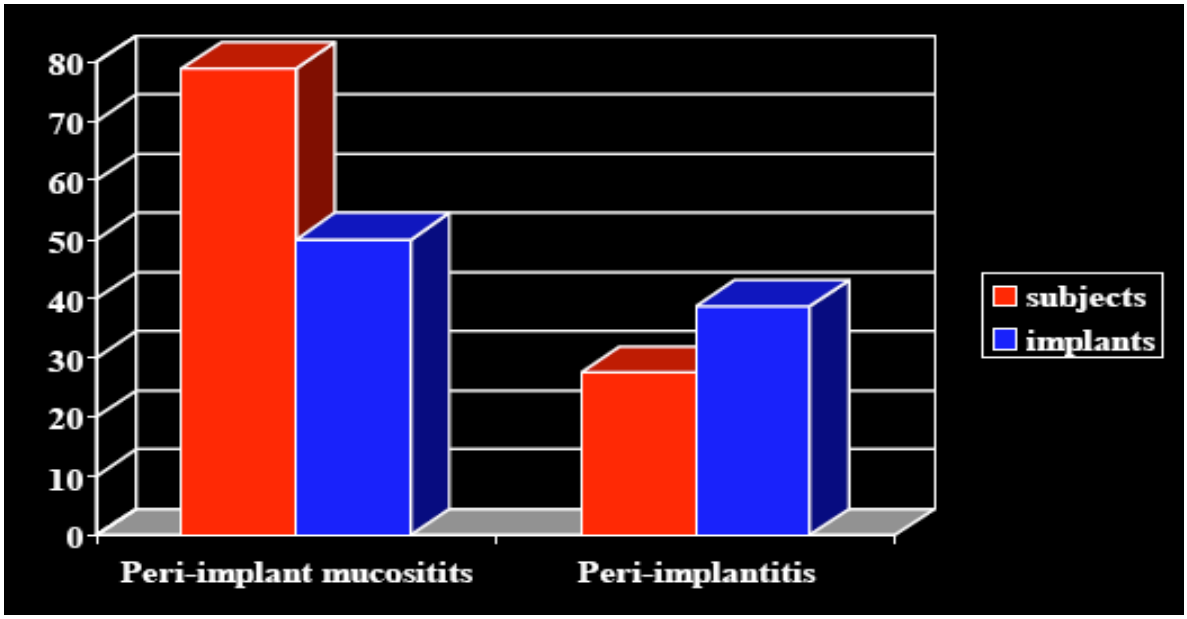

80
70
60
50
40
30
20
10
0
Peri-implant mucositits
Peri-implantitis
subjects
implants

Fig 8.

8. Risk indicators for peri-implant disease

當然為了您植牙生涯的長治久安，以下的狀況需要事先處理好：

a. History of Periodontitis

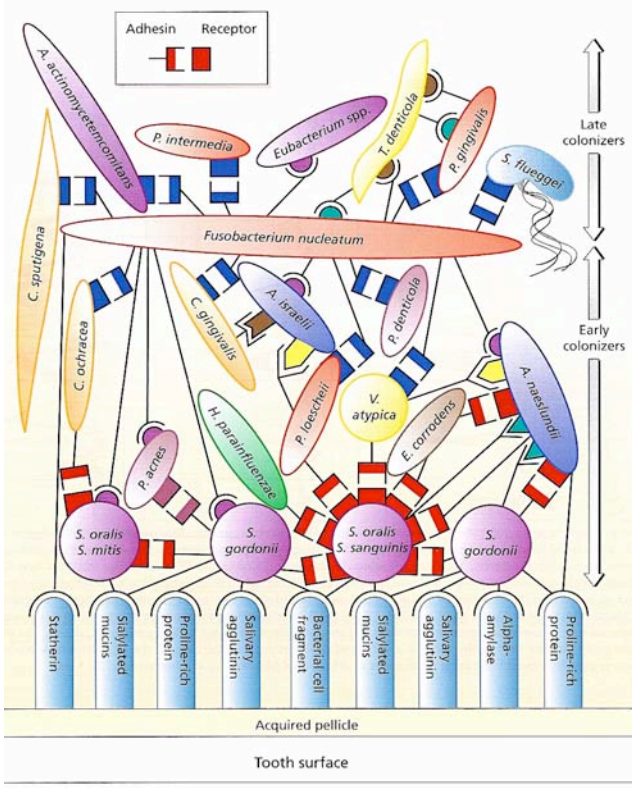
b. Poorly controlled diabetes

c. Subjects with (+) IL-1 genotype and a heavy smoker: More implant complications

d. Alcohol consumption > 10 g / day

e. Implant surface selection : More bone loss associated with rough surface implant

避免掉以上的危險因素後，再進行植牙的步驟會有較好的療效及成功率！



三. 牙周炎及植體周圍炎的微生物致病機轉

9. Risk indicators for peri-implant disease

口腔內約有四百多種細菌，其中約有十到十五種的牙周病致病菌，而最重要的觀念是口腔內寄生菌落的生成的速度是很快的，甚至在剛刷完牙的十幾秒後就有細菌開始生成，大部份這樣的菌落並不會造成組織的傷害；然而經過一段時間這些細菌成熟之後，就會在牙周囊袋出現所謂的牙周病致病菌的牙菌斑 (Pathogenic plaque) 開始造成牙周組織的病變及破壞，主要的菌種包含：*Aggregatibacter actinomycetemcomitans, Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola*；次要的菌種包含：*Prevotella intermedia, Peptostreptococcus micros, Fusobacterium nucleatum*。

10. Formation of pathogenic plaque in pockets (Fig. 9)

11. Periodontal bacteria in health and periodontitis (Fig. 10)

12. Periodontal bacteria associated with teeth and dental implant

以下橘色部份代表植體表面，藍色部份代表牙齒表面不同菌種依不同時間增加，各種菌落成長數量的分布圖；結果發現造成自然牙的牙周病致病菌的種類、寄生菌落形成方式及比例，在植體上隨著時間造成的現象幾乎是一致的 (Fig 11)。

Fig 9. 牙周囊袋中從牙齒表面的 Acquired pedicle 附著的早期寄生菌落 (Early colonization)，逐漸演變成交互連結堆疊的晚期寄生菌落 (Late colonization)，最後衍生成為成熟的牙周致病菌落。

13. Microbial etiology of peri-implantitis

自然牙以及植牙體的牙周疾病致病機轉，幾乎是相同的，因為在植牙的患者口中觀察到一個現象：若是患者口內的植體周圍組織保持健康狀態，牙周病致病菌在其口腔內分布的比例就非常低，然而在發生植體周圍炎 (Peri-implantitis) 的患者口中，不僅在患處植體周圍有大量牙周病致病菌種聚集，亦會在其它健康植體周邊檢測出高比例的相同致病菌 (Fig 12)。

14. Peri-implantitis and periodontitis are biofilm-associated infection

因為口腔內植體和自然牙的牙周病致病菌，都是以一種生物膜 (Biofilm) 的方式生存 (Fig 13)，所以意味著這些細菌對於機械性及化學性的治療方式，都有著頑強的抵抗力；也就是說無法靠患者用簡單的刷牙或沖牙機，或是投以全身性抗生素就能有效掌控病情。另外，這類細菌多為內生性的感染原 (Endogenous) 是無法避免其在口內生長的；唯一的方法，就是創造一個環境讓此類牙周病致病菌生物膜不易形成。因此，要考慮植體植入的位置、贋復體設計、全身性疾病控制、患者口腔衛生及牙菌斑控制，才能有效減少植體周圍炎的產生或復發。

Fig 10.
本圖取自 Dr. Socransky 之研究

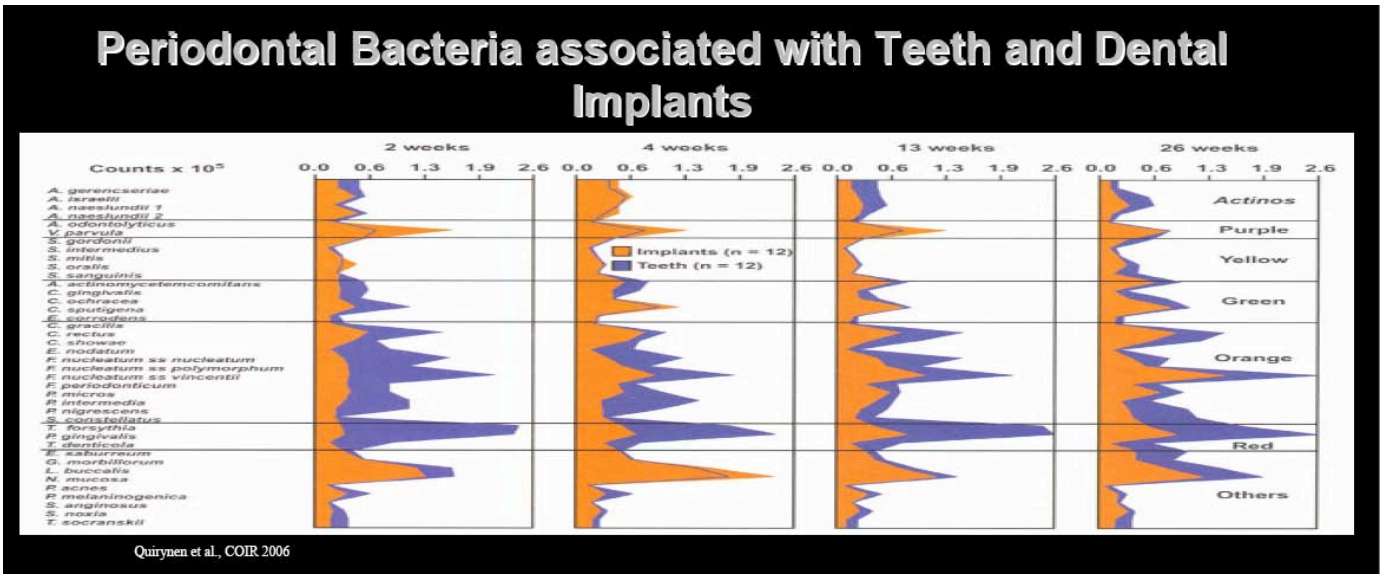


Fig 11.

四. 牙周炎及植體周圍炎的臨床診斷及治療原則

15. Implant surface as a factor for the progression of peri-implantitis

不同表面處理的植體會造成細菌依附容易度的不同，一旦產生植體周圍炎時，造成比較不容易去除致病菌的植體，而其中發現以 TiUnite 表面處理的植體產生較多的骨質流失吸收 (Fig 14)。

16. Treatment of peri-implantitis

回顧既有的治療模式中，我們發現臨床上並無所謂隨機控制的試驗 (Randomized controlled trial) 可供參考，而且許多治療方法是沒有標準且互異的；甚至今天許多治療方法是無法證實效果的，然而仍舊有少數案例可透過一種抗感染的模式得到不錯的效果，就是Dr. Lang 在 2000 年提出的漸進阻斷式支持性療法 (CIST, Cumulative Inerceptive Supportive Therapy) (Fig 15)，根據不同嚴重度的發炎植體，配合不同階段效果給與不同的治療內容，盡量以保存植體及周圍組織的方法，延長植體的使用壽命！

17. CIST: Cumulative interceptive supportive therapy

治療程序如下，流程表 (Fig 16) 為以下簡表：

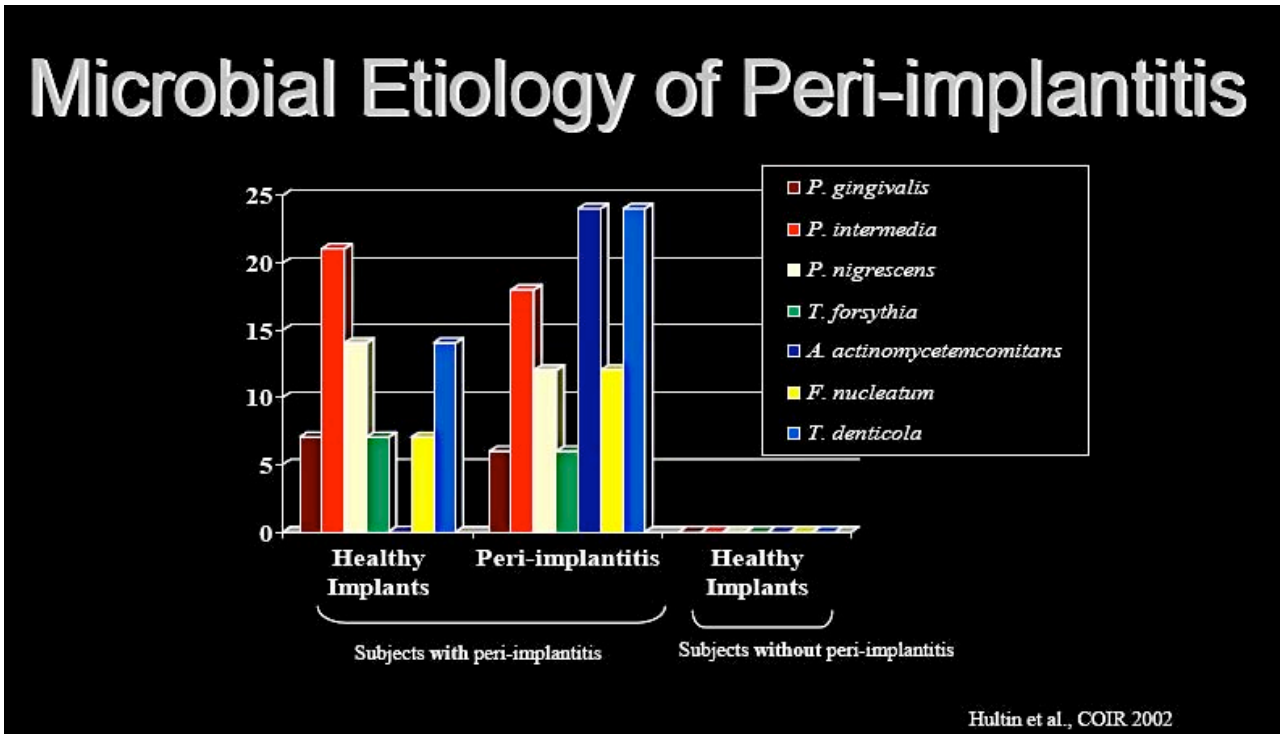


Fig 12.

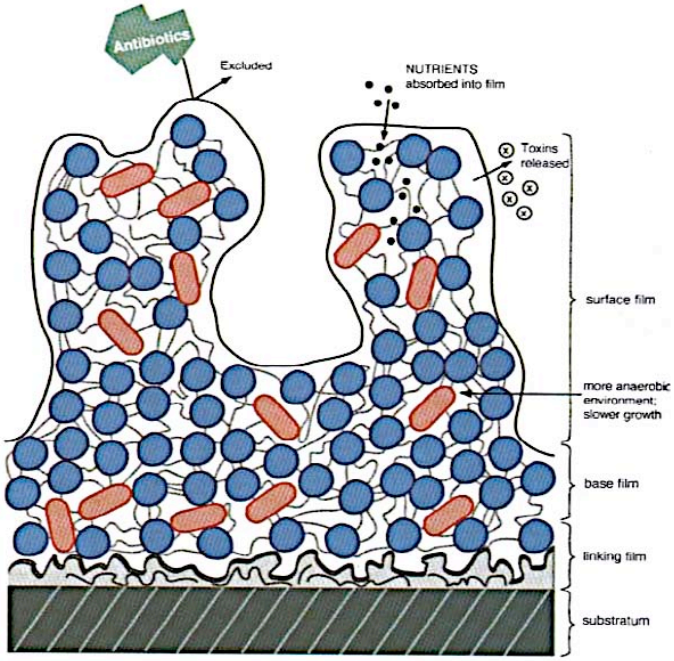


Fig 13.

1. Increased tendency of inflammation and probing depth and/or poor oral hygiene; 3-4 mm probing depth：

   治療方式：**A**
   OHI; Scaling; Mechanically cleaning the implants with rubber cup and polishing paste

2. 4-5 mm probing depth, inflammation, initial evidence for peri-implantitis

   治療方式： **A + B**
   Local antiseptic such as subgingival irrigation with 0.2% CHX (if possible also by the patient), daily oral rinse with CHX

3. 5 mm probing depth; Clear evidence of bone loss

   治療方式： **A + B + C**
   Microbial sampling; A+B, followed by systemic antimicrobial therapy, and/or local delivery of antibiotics

4. Continuing bone loss

   治療方式： **A + B + C + D**
   Surgical treatment: Resective surgery or Regenerative surgery

5. Hopeless implant

   治療方式： **E** （Explantation）
   Principle in anti-infective surgery: remove granulation

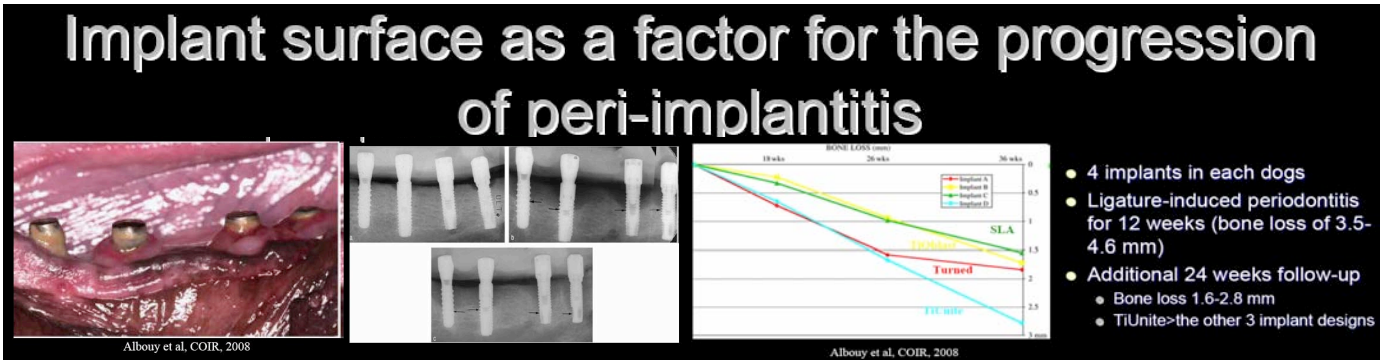


Fig 14.

tissue, clean implant surface, modify existing bony defect, create favorable environment for implant maintenance.

18. Decontamination protocol

感染的植牙表面處理方式的一般準則，就是重複部份或是全部的下列步驟：

~ CHX
~ Air abrasive
~ Application of tetracycline solution
~ Hydrogen peroxide
~ Citric acid

在臨床翻瓣手術合併以上的表面處理方式，可以得到追蹤維護的良好效果 (Fig 17)。

19. Regenerative procedures

植牙周圍再生手術可搭配不同植骨材料及再生膜，一般對於 3 - wall 之骨缺損有較佳的效果，但通常不會有骨整合的結果。對於 Rough surface 植體造成 re-osseous integration 的程度要大於 smooth surface 植體。

20. Summary

依照治療植體周圍炎發生的嚴重度，而有不同的治療內容及程序 (Fig 18)；但是基本的原則是不變的，就是預防重於治療。治療需要準確精細的診斷及步驟，如此就能避免許多不必要的損失及災難發生！

~ Peri-implantitis behaves similar to periodontitis.

~ The prevalence of peri-implantitis will be 30-50% after being used for 20 years.

~ It is preventable, because the disease is most likely due to unfavorable local environment created by our treatment.

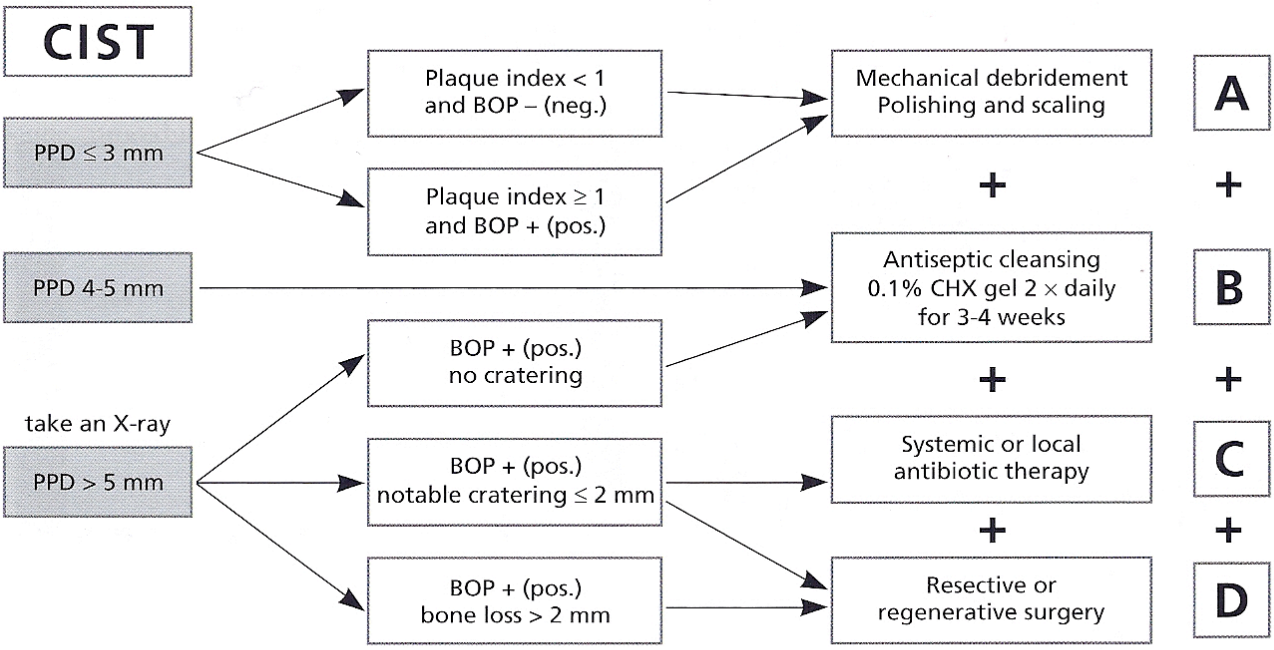
~ Treatment of Peri-implantitis:

- Manage periodontitis first.
- Mechanical debridement and cleaning of implants
- Resective surgical Tx. will have some success in disease resolution.
- Regeneration therapy should be attempted to in some cases but will likely result in limited success.

LANG, ET AL 2000
CUMULATIVE INTERCEPTIVE SUPPORTIVE THERAPY (CIST)

Clinical parameters					Maintenance classification	CIST
PII	BOP	Suppuration	PD mm	RX defect		
±	–	–	<4	–	0	(A)
+	+	–	<4	–	I	A
+	+	±	4–5	+	II	A+B
+	+	±	>5	++	III	A+B+C
+	+	±	>5	+++	IV	A+B+C+D
+	+	±	>5	++++	V	E

Fig 15.



Decision tree for cumulative interceptive supportive therapy (CIST). Depending on the mucosal condition and probing depth, either regime A or regime A+B, regime A+B+C or regime A+B+C+D are performed. A = Mechanical debridement; B = Antiseptic cleansing; C = Antibiotic therapy; D = Resective or regenerative surgery.

Fig 16.

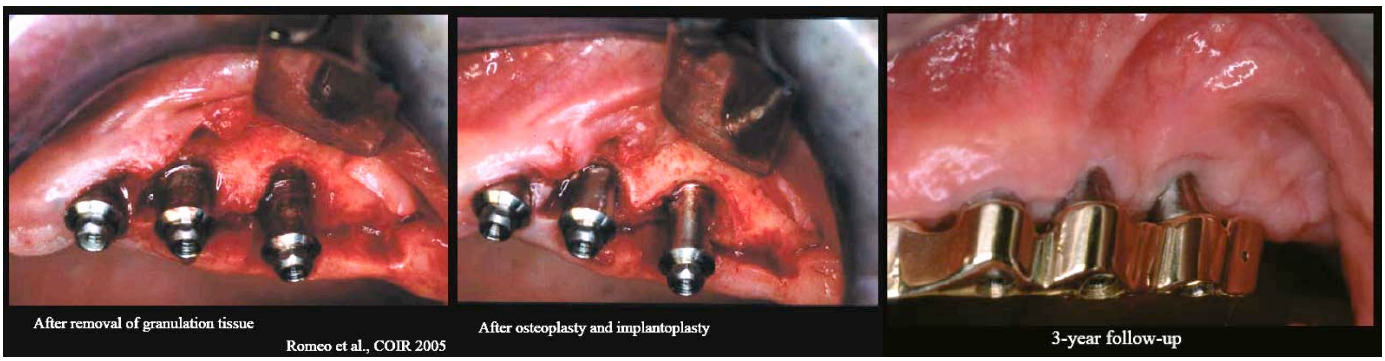


Fig 17.

Fig 18.

Q & A

Q1: G (+) 細菌在植體周圍炎患處比例較高，藥物治療上是否有特殊意義？

A：例如 Staphylococcus oralis 多發現於 peri-implantitis，而較少見於periodontitis，但就治療的原則而言，機械性清除致病菌原，要遠比用藥物治療效果好。

Q2: 植牙周圍再生手術配合 citric acid 表面處理的效果？

A：由於 rough surface 在操作中較難深入，所以 citric acid 表面處理的效果是難預測的。

Q3: Laser 對於 peri-implantitis治療上的效果？

A：不能僅使用雷射，必須配合機械性清除致病原的操作準則，因為雷射對於感染的植體表面並無所謂 decontamination 的效果。

Q4: Platform switching implant 對於 peri-implantitis 預防上是否有幫助？

A：Platform switching 的設計可藉由增加 biological width，以及防止 early bone loss 來達到減少 peri-implantitis 發生的機率 (Fig 19)。

Q5: 植牙周圍再生手術的 criteria?

A：很困難的問題，原則要保留組織結構，並儘量避免傷害性大的植體移除手術，尤其在美觀區植體的處理更要謹慎。

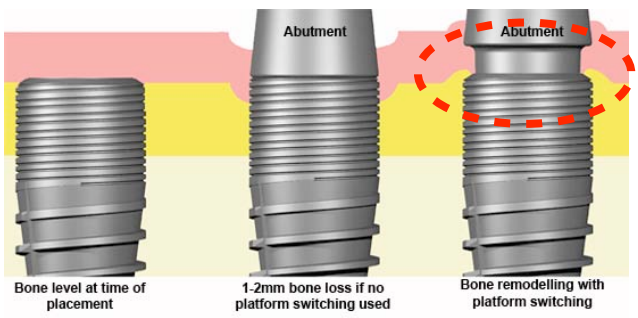


Fig 19. Platform switching 的設計 (最右植體紅圈標示處)

Soft Tissue Graft

Vertical Vestibular Incision Subperiosteal Technique Access (VISTA)

Beethoven Orthodontic Center, Taiwan

張慧男 醫師
貝多芬牙醫診所
金牛頓藝術科技公司

Gingival recession can cause not only root hypersensitivity but also concerns over anterior esthetics. There are several materials which can provide root coverage to prevent gingival recession, such as connective tissue graft, dermal matrix, collagen membrane. Generally connective tissue graft is the one of the most predictable materials regardless of tissue biotype. A number of surgical approaches are commonly used, including coronally advanced flap, lateral sliding graft and the tunnel method. In the anterior esthetic area, the tunnel method is a good surgical technique for its advantages in reducing scar and preserving the shape of papillae and soft tissue . However, the traditional tunnel method which involves putting CT graft from one tooth to another tooth is highly technique intensive. Therefore, Dr. Zadeh invented the VISTA (Vertical Vestibular Incision Superperiosteal Tunnel Access) technique to make the tunneling method more manageable. Dr. Chang Chris further proposes the Three Head Technique to simply the VISTA technique.

Sharon HF Chang, Chris HN Chang, Homa Zadeh

A Case Report Demonstrating VISTA Application on Gingival Recession over the Upper Lateral Incisor and Canine.

A young female had class II deep bite malocclusion with upper L't canine (#23) labial block out. After orthodontic treatment, due to thin buccal bone of #23 and too much brushing force, #22 & #23 suffered from gingival recession and cervical abrasion.

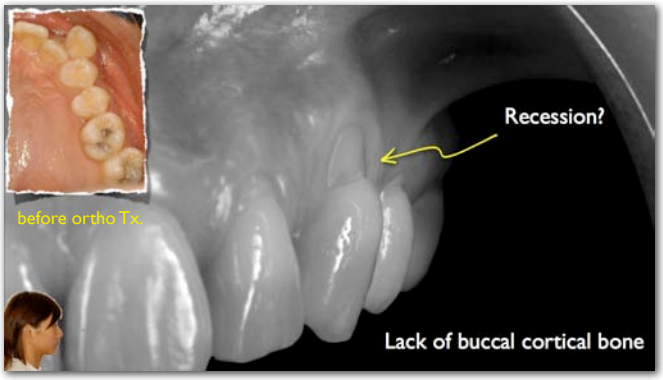
When performing root coverage to treat gingival recession, we first need to identify the CEJ position, check the interproximal bone level and the amount of keratinized gingiva left. In this Miller's class I case, we have a good chance to achieve 100% root coverage . The surgical procedures of VISTA are outlined as below:

SURGICAL PROCEDURES

1. Recipient site preparation

(a) Root preparation (Fig. 1)

Prior to the surgery, scaling and root planing have to be completed. Then use fine diamond bur or Neumyer root planing bur to make a smooth concave root surface. Despite some existing controversies, we still advise using 20%EDTA for root conditioning which can remove a smear layer and has a detoxificating effect.



張雪芬 醫師
普洛牙醫診所
貝多芬矯正課程講師

(b) Make two vertical vestibular incisions (Fig. 2) and create full thickness subperiosteal tunneling elevation

This is a blunt dissection, using periosteal elevator to create full thickness tunneling elevation and a deep pouch from papillae and beyond MGJ. Meanwhile, remember to keep the tip of the interproximal papillae attached to the bone.

2. Donor site surgery (1 incision technique: get connective tissue graft from hard palate) (Fig. 3,4,5)

Get a template to determine how big the graft is needed.

(a) The 1st incision needs to be 2-3 mm in depth apical to the deepest pocket, 90 degrees to palate and directly touch the bone.

(b) The 2nd incision starts from 1-1.5mm deep of the 1st incision and runs parellel to the tooth's long axis until touching the base of the palate.

(c) The 3rd inner cut is first to make a vertical incision, use an elevator to create full thickness elevation and get connective tissue graft out.

(d) Put Colla-Tape inside the wound, close it with suture and then put tissue glue to secure the wound.

3. Extra-oral graft preparation

(a) it's unnecessary to remove excessive tissue (Fig. 5)

(b) Three Head Technique for CT graft fixation

Use three 4-0 silk sutures to grasp this CT graft (Fig 6). Bend needle backwards to make a blunt end(Fig.7).

4. Place the CT graft in the recipient site and perform the Three Head Technique (Fig.8,9,10)

5. Position the CT graft at the CEJ level, then perform coronally advanced flap which is better to make 1mm overcorrection above CEJ.

6. USE 6-0 nylon suture to secure CT graft and flap. Wear clear retainers to prevent minor tooth movement (Fig.11,12,13)

7. Keep the suture for over three weeks, and the outcome will be more predictable and stable. (Fig. 14, 15)

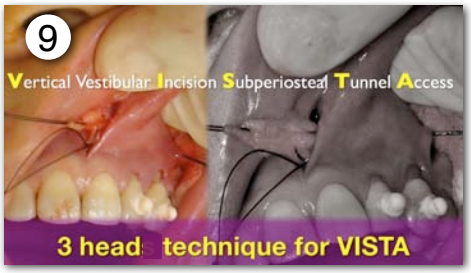

4
Connective Tissue Graft


5
Do you need to remove fat tissue?
No, it's not necessary for CT graft


6
4-0 Silk
3 head technique for VISTA


7
4-0 Silk
create a blunt needle end


8


9
Vertical Vestibular Incision Subperiosteal Tunnel Access
3 head technique for VISTA


10
3 head technique for VISTA


11
6-0 Nylon for minimal trauma
Suture is very important!!!


12
Key: Stabilization: the flap is pressed W a gauze soaked W
saline solution for 10 min to prevent dead space


13
Wear the Clear Retainer to
prevent minor tooth movement


14
post-op 20 day


15
post-op 27 day

貝多芬齒顎矯正中心 Beethoven

貝多芬矯正系列課程

矯正植體課程

演講講解矯正植體操作時機、方法，
並在診所臨床跟診及實例示範。

9/17(五)
9:00-20:00

課程介紹： OrthoBoneScrew in-office Workshop

牙醫師不敢或是不知如何植入miniscrew，大抵有兩個原因：一是無法突破心理障礙；另一則是認為操作困難。然而，張醫師透過高效率的課程講授，直接切入重點，使您輕鬆掌握；簡潔的步驟，讓您不再求助牙周或口外醫師。百聞不如一“ 做 ”，相信短短一天的課程，您將親身見證！

全方位牙醫診所　王肖龍醫師

助理訓練課程

兩階段實務課程，含照相術，
Morph製作及病患公關和衛教。

10/8、15(五)
9:00-20:00

課程介紹：訓練得力助手好時機

針對矯正助理的臨床技巧，包含：照相、X光拍攝、Damon系統相關知識介紹等等，以及牙科電腦應用，例如：衛教檔案製作、Morph病例以及Keynote病例製作進行示範教學。結合課堂講解以及診間實習雙重教學方式，務必幫助您快速培養出得力的矯正助理。

Study Report from the Visit of the Beethoven Orthodontic Center

貝多芬矯正之旅

如何可以快速的學會矯正？我想這是很多GP想要的答案，很感謝張醫師給了我一個難得的機會到貝多芬矯正中心見習，讓我親身感受到這種神奇的教學方法。我是矯正的門外漢，除了在學校學了兩個學期的知識，從未有過任何臨床的經驗，對矯正是又愛又恨。經過這20天的學習，我已經躍躍欲試。並非我拿我的病人當白老鼠，而是貝多芬的矯正課程和臨床上的一致性，加上張醫師的高效率學習方法，讓我信心滿滿。我不是天才，20天能把矯正學會是不可能的。但是，貝多芬已為我打好紮實的基礎，我已經可以從簡單的case開始我的矯正之旅。現在我就和各位分享我這20天學習的體認。

在到貝多芬之前我已經事先學習過iPod touch的教學課程，我想這是我可以很快進入狀況的原因。我覺得用iPod touch來做學前的準備及學後的複習，都是最佳的工具。想想看你是否可以把演講全部都帶回家？或是把演講的精華全部都記下來，又不影響你的注意力？很難，對不對？而iPod touch提供了最佳的筆記，而且，如果事先研究過張醫師的課程再去聽課，一定是事半功倍。這一次我也有機會和基礎班以及進階班一起上課，很明顯的例子就是我有預先學習過的課程，我很快就能捉住重點。而沒有預習到的課程，就像走馬看花，無法在心裡產生共鳴。所以我建議學員們應該用iPod touch來幫助學習。另外，我發覺張醫師真的很用心在教課，因為他會適時地改變他的演講來改善課程內容。同樣的課題，有時侯會有不同的表現方法。這些都是為了讓學員們更容易學習。

我記得見習第二天張醫師就跟我說： 如果要學好矯正，就必須做case report，以及在課堂上報告。唯有知道如何教別人，自己才會真懂 。雖然剛開始有些疑惑，但就在 準備Keynote的同時，我才深深的體會到他的用心，並且慶幸自己如此去做。因為當我在做 Keynote的同時，相同的資訊在腦子裡來回的想來想去，久了，就變成自己的東西，想要忘記都很難。對我而言，這個 Keynote檔就是我這20天的成績。而且把 知道的知識做成檔案，它就成為一個實質看得到的東西，而不僅僅祇是在腦子裡的概念而已 。當我把我做的檔案秀給我美國的同學看的時候，從他們驚訝的眼光，我自己都不相信，我這個電腦白癡，居然可以做出這樣的 Keynote檔。

如果你參觀過貝多芬矯正中心，一定會很驚訝它的經營效率。平均一天六個小時 100個門診量，而且，每位病人都會經過助理、住院醫師和張醫師的操作和檢查。如果沒有 很好的管理和制度 是無法做到的，更重要的是它的和諧性。每位人員很有秩序的做自己該做的事，雖然緊張但一點也不混亂，整個診所瀰漫 着愉快的氣氛。我曾經請教過張醫師是如何做到的？他說如果每天想辦法改進 1個錯誤，久了也就沒有太多須要改進了。我個人認為今天貝多芬矯正中心的成功，源於一個 合理的計劃以及高度的執行力 。因為計劃的合理性，所以它可以被執行。說起來容易，可是，如果沒有超人的智慧和對下屬的信任，是做不到的。難怪貝多芬的成員，每一位都能發揮個人的最大潛力，而不是機械性的工作。

習慣了貝多芬高效率的工作環境，回到美國自己的診所，反而不習慣了。這 20天的見習我有很多的收獲，很感謝張醫師和高老師給我這個機會。同時，我也要感謝各位助教對我的幫助，以及貝多芬和金牛頓所有員工對我的耐心教導。謝謝大家！這一次，除了矯正的學習之外，我也學習到管理的觀念，更重要的是 做事的態度--把每一件事情認真的做好，即使它是一件很簡單的事情 。我想，貝多芬矯正中心就是在許多許多的認真下建成的。

Johnathon Lee D.D.S.
Cum Laude Art of Dentistry, General Dentistry, LA, USA

作者是 Dr. Samuel Lee 在UCLA牙科同班同學，並以優異成績前三名畢業。

Feedback from the Keynote Workshop

總是抱怨助理沒默契，病患不懂你的價值，與人交談往往雞同鴨講…曾經想過責任可能在自己？

表達力=影響力

“tell a good story”是當代顯學，引人入勝的簡報能力，是我們最值得努力的功課，也是魅力的來源。願意在表達力上精進不懈，出自對於他人的關注與誠意。

個人魅力的培養並非一蹴可幾，勤奮與努力是必要條件，方法卻是關鍵－－張醫師的 “高效學習法”，源自個人對學習與教學的熱忱，總是以學員的權益為優先，精心設計。 這是課程最珍貴的價值，也是吾輩 make a difference 的契機！

感恩張醫師與金牛頓團隊傳授給我的一切，讓我勇於挑戰個人極限，樂於分享，在職場與社團發揮影響力。這不只是一門電腦課，而是開拓人生視野一扇窗的機會。

曾婉青 醫師
東成牙醫診所

Feedback from the Beethoven Advanced Course

再一次，我們透過張醫師深入淺出的高效教學，經由大量病例鉅細靡遺的解說，讓您快速有效地掌握實用的臨床技術；透過經典文章的研讀，讓你不但瞭解背後的原理，更能建立完整的思考邏輯。藉由這一系列的課程，你學會的是21世紀的矯正觀念和技術讓你不只學會做矯正，更學會做好矯正。

張慧男醫師的矯正進階課程是想要更上層樓的你不能錯過的選擇。

田曉鈞 醫師
康橋牙科

臨床矯正治療錨定的利器，關於OBS的二三事

兵家所謂「工欲善其事，必先利其器」，敝人在OBS 的使用上，深有同感。由於先前MIA的失敗率很高，幸好有OBS，彷彿他鄉遇故知，從此順利地脫離窘境 。茲將OBS的優點列述於下：

1. 蘑菇頭的設計：Coil Spring 與Power Chain 不易脫落，也不用掛勾。
2. 光滑的長頸部，易清潔，不易發炎。
3. 銳利的螺紋提供足夠的機械性固持。
4. 尖銳的尖端很容易自攻，操作時間超短。

記得，要應用OBS 之前，來一趟貝多芬的OBS One Day Course，你就會了解“OBS really have the edge & are state of the art”。以上所述乃平凡人跟聰明人學習與使用的心得，如果你也有相同的困擾，試一下OBS，一定行！

楊朝惇 醫師
拉圖牙醫診所

Feedback from Dr. Chang's Lecture in Malaysia

Dr. Chris Chang's lectures have given a lot of practical tips for the use of **OrthoBoneScrews**.

A lot of tough cases can be treated much easier now with the use of **OrthoBoneScrews**. They have made the life much easier for those who treat many of the quite frustrated orthodontic cases as the results of using **OrthoBoneScrews** are more satisfied and completed.

To me, the lecture is a must for those who practice orthodontics.

Joseph Chua

時間飛逝，轉眼間，距離上次至新竹進修（International OBS workshop) 已一年。iPod對於複習很有幫助，如果有聲音，效果會更好，值得推薦。

再次聽到張老師的精彩講解是今年六月在吉隆坡馬來西亞牙醫師公會年會的國際學術研討會上。一位台灣籍講師能在眾多大師出席的研討會上，像磁鐵般把大家牢牢吸住，除了生動的演說技巧及多媒體技術輔助外，最重要的還是誠心誠意，把每一步驟詳盡的、無私的解說。與會的聽眾學者彷彿跟隨張老師身邊，親身經歷了整個治療過程，在獲得圓滿成果之時，還有檢討下次遇到同樣難題的解決方法。這種教學方法，對於有意學習矯正的年輕醫師，可以免除許多冤枉路。對於有經驗的矯正醫師，敞開胸懷，發表更多精彩的矯正成果，共同分享成熟的技術，我們的病人才是最大贏家。

以上數語，乃小弟對張醫師講課感言，希能笑納。

弟 許贊禮 上

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Summer 10' 課程

類型	課程名稱	內容	開課日期	上課對象
入門推廣	iPhone 3GS 新手上路	iPhone+iTunes	7/10, 8/7（六） 15:00～16:00	樂於嘗試生活科技應用者
入門推廣	iLife系列： 輕鬆剪輯精彩生活影片	iMovie+IDVD	7/17, 8/14（六） 15:00～16:00	樂於嘗試生活科技應用者
入門推廣	認識蘋果世界裡的超好用小軟體	影音轉檔軟體	7/24, 8/21（六） 15:00～16:00	樂於嘗試生活科技應用者
入門推廣	iLife系列： 管理美好生活影像	iPhoto	7/31, 8/28（六） 15:00～16:00	樂於嘗試生活科技應用者
入門推廣	Mac OS X 蘋果電腦新手入門	Mac OS X	7/4, 8/8（日） 15:00～16:00	樂於嘗試生活科技應用者
入門推廣	iWork系列： 簡單上手的多媒體簡報	Keynote	7/11, 8/15（日） 15:00～16:00	樂於嘗試生活科技應用者
入門推廣	iWork系列： 整理表格數據的好幫手	Numbers	7/18, 8/22（日） 15:00～16:00	樂於嘗試生活科技應用者
入門推廣	iWork系列： 製作個人化的印刷品	Pages	7/25, 8/29（日） 15:00～16:00	樂於嘗試生活科技應用者
專業簡報	Keynote簡報法 series 1 簡報聖經	1. 常見簡報謬誤 2. Keynote 入門	11 月 18 日（四） 09:00～16:00	科技人、醫師、 教師、學生
專業簡報	Keynote簡報法 series 2 Kokich的10大演講秘訣	1. 多媒體影像處理 2. 簡報設計	12 月 16 日（四） 09:00～17:00	科技人、醫師、 教師、學生
專業簡報	Keynote簡報法 series 3 How to Wow'em like Steve Jobs?	1. 賈伯斯演講秘訣 2. 簡報設計進階應用	2011年 1月 13 日 （四） 09:00～17:00	科技人、醫師、 教師、學生
International	Damon and OBS workshop	1.Damon System 2. OrthoBoneScrew	8/14-16, 12/7-9	International Orthodontists
OBS	OrthoBoneScrew Workshop	OBS lecture Hands-on Workshop	9/17 (五)	矯正醫師

注意事項：上課期間欲租借教學用電腦，酌收維護費200元，可抵用店內消費。
上課地點：金牛頓藝術科技教育中心（交大華廈2樓）新竹市建中一路25號（巴士馬偕醫院下車步行5分鐘）
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For more information visit http://orthobonescrew.com

Dr. Chris Chang lecturing on "Impacted Cuspids" at the 67th Malaysia Dental Association AGM/FDI World Dental Scientific Convention and Trade Exhibition, 2010

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Beethoven's Damon Comprehensive Orthodontic Course, Taipei, 2010