Treatment of Severe Class III Cases Demonstrating Damon’s MEAW Effect
Dr. John Lin

The Key Elements of a Quality Orthodontic Practice
Charlene White

ABO Case Report: Class II Low Angle Adult Case with a Talon Cusp
Dr. W. Eugene Roberts

學會開始做矯正需多久？
39小時讓您入門矯正。本課程採用高效學習法及高效矯正簡報法 - Keynote，
在舒適、輕鬆的環境下，學員簡單有效的矯正方法，教室與課間合
讓您現學現用，立即熟悉各種獨特的技巧，而不需太多課後複習。
全程以 In-Office Training 方式，由病例帶動分析、診斷，治療計畫與療程
t每一步驟以圖片及影片教學，讓您難忘甚至任何環節，更沒有
聆聽清楚或無法理解的可能。為提高與自身學員及臨床印證之效率，
另備有教學電子檔，供學員緩衝複習。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矯正課程

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Lecture

- 理想入門病例 + Damon Q
- 快速矯正療程四部曲
- 閃速有效的鑲定系統
- 不拔牙及拔牙分析
- Damon 診斷流程及微調
- 完工檢覈及報告示範
- 維持及復發：病例示範
- Damon + OrthoBoneScrew I
- Damon + OrthoBoneScrew II
- Finishing & Polishing
- Fixed Retainer (FR)
- Presentation Demo
- CDU + Case Reports

International Workshop

Keynote & management OrthoBoneScrew & Damon
8/14~16/10 12/7~9/10

助理訓練課程

每週兩堂課/3小時操作，內容為操作實習、內有相機技術、Morph 與
相關衛教之電器資料處理；另安排一次臨床見習。

助教訓練

鋼牙固定及診斷分析
- Damon + OrthoBoneScrew

課程資訊

課程項目        時段    上課地點
Damon矯正 台中/高雄 金牛藝術科技公司
-10/09 12:00

矯正進階

【新竹】
-10/09 12:00

矯正精修

【新竹】
-10/09 12:00

矯正植體

【高雄】
-10/09 12:00

助理訓練

【高雄】
-10/09 12:00

課程報名專線：
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(04) 23358915 蔣雲云 / (07) 5361701 王慧遠
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-Vizcaya. 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-Vizcaya 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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Consultant
Dr. Homa Zadeh

Consultant
Dr. Kwang Bum Park

Consultant
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Consultant
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Please send your articles to beeth.oven@msa.hinet.net
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 orthognathic 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)
Fig. 1A: 11y2m. Frontal and open smile views of the patient.

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

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

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. 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.

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

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

The patient returned to seek treatment again. She still had an orthognathic CR profile and maintained significant C1 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).

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

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

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<tr>
<td>Posterior chewing</td>
<td>Difficult</td>
<td>Some occlusal contact</td>
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<tr>
<td>Correction of over-closure</td>
<td>Free eruption of posterior teeth</td>
<td>More difficult to correct</td>
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<tr>
<td>Bonding of anterior teeth</td>
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Table 1: Comparison of disocclusion methods for correction of anterior crossbite.
this type of cases, might be using the buccal shelf bone screws to retract the lower anterior teeth\textsuperscript{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\textsuperscript{®} brackets upside down as instructed in Tom Pitts’ method \textsuperscript{2}, which explains, in order to avoid flaring of upper incisors, the upside down use of standard Damon 3MX\textsuperscript{®} 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 brackets, and high torque lower brackets.) (Fig. 13B) (Fig. 13C: Excellent torque control on the upper arch with upside down standard D3MX\textsuperscript{®} 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\textsuperscript{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 \textsuperscript{6} and Dr. Tom Pitts’ efficient use of light short Cl III
elastics which can correct Cl III more efficiently 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.

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 cephalometric tracings of the presented cases.
3. Tzu-Han Huang’s English editing.

References

2nd World & 9th Asian Implant Orthodontic Conference
Dec. 10th ~ 12th, 2010


**Registration Fee**

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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

**Place**

Taipei International Convention Center, Taipei, Taiwan

**Home Page of the Congress**


Organized by

Taiwan Association of Orthodontists

World Implant Orthodontic Conference
創新矯正方程式
(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，
目前由於自鎖式托槽 (straight wire appliances) 及最近蓬勃發展出來的
自鎖矯正器之市售，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，如何做最安全而無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。

[處理智齒的問題]
國內蛀牙率偏高，不理想的潔牙情況相當常見，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受手術
拔智齒之痛苦，甚至避免因拔除智齒而造成第二犬歯牙
周問題之困擾。

講師 | 內容簡介
Speaker & Lecture
Introduction

如何發揮 Damon Q 的療效
Damon Q 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齦移動的控制。

張慧男 醫師
新竹具多牙醫學矯正中心負責人
美國印地安那大學牙醫學矯正研究客座博士
美國審核機構正畸學權威學會考試考評（ABO）
### Lecture Information

**Organizer:** 臺灣隱適美牙友學會 (台大牙醫校友會)  
**Co-Organizer:** 蔡其芳企業股份有限公司  
**Host:** 張耀 理師  
**Speaker:** 林錦榮 | 張慧男 | 醫師  
**Topic:** Creative Orthodontic Formula  
**Time:** 2010.10.31 周日 9:00 - 17:00  
**Venue:** 臺灣金融研訓院舞廳，台北市羅斯福路三段 62 號 (捷運臺電大樓站 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:** 參加者給予網路登記繼續教育學分  
**Registration:** 請先電話報名 (02)27788315 分機 122 M6 業，分機 121 M6 李  
關於三日內完成截止費用，郵政劃撥帳號 17471807  
**Remark:** 戶名：蔡其芳企業 (股)公司，備註欄註明「2010.10.31演講」  
活動場茶點及午餐，報名未出席者，恕不退還登記款項

### Schedule

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The Key Elements of a Quality Orthodontic Practice

Charlene White

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

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.

1. 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 element 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.
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.

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.

**4 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.

**5 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.
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.

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:
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.

There is nothing better for practice building than happy patients telling others about their orthodontic result and their
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.

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.

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.

**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.

**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 forefront 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.

**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.

### 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.

### 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.
| 系列 | 矯正行動學習的最佳利器 |
|-------|-----------------
| 系列一: 理想入門病例及矯正器黏著 | 系列七: 維持及後發: 持續微力的祕訣 |
| 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: 簡潔有效的鑑定系統 | 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 診療流程及微調 | 系列十一: 成人矯正及診斷分析 (4) |
| 系列六: 生物力學及完工檢測 | |
| AV. 矯正音基礎視訊課程十大系列 | 售價：14,300元 |
| VOBG. 矯正音基礎視訊課程系列 | 售價：2,600元 |
| C. 矯正音基礎視訊課程五大系列 | 售價：7,000元 |
| 系列一: 認識Damon器械/照相 | 系列四: 取模/活動與固定維持器 |
| 系列二: 初診流程/療程說明/X-ray | 系列五: 矯正螺絲/Damon Morph/衛教Keynote |
| 系列三: Bond與相關術教/辨認Damon線/Damon應對Q&A | |
| E. 矯正音基礎視訊課程系列 | 售價：14,300元 |
| F. 矯正音基礎視訊課程系列 | 售價：10,000元 |
| 免費贈送：年度內容更新，針對演講聽眾，再送演講錄音。連絡電話：03-5735676 黃思涵 網址：www.newtonsa.com.tw |
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 evaginatus 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
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
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

**Table.** Cephalometric summary

<table>
<thead>
<tr>
<th>SKELETAL ANALYSIS</th>
<th>PRE-TX</th>
<th>POST-TX</th>
<th>DIFF.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNA°</td>
<td>82°</td>
<td>83°</td>
<td>1°</td>
</tr>
<tr>
<td>SNB°</td>
<td>80°</td>
<td>81°</td>
<td>1°</td>
</tr>
<tr>
<td>ANB°</td>
<td>2°</td>
<td>1°</td>
<td>1°</td>
</tr>
<tr>
<td>SN-MP°</td>
<td>25°</td>
<td>26°</td>
<td>1°</td>
</tr>
<tr>
<td>FMA°</td>
<td>19°</td>
<td>20°</td>
<td>1°</td>
</tr>
</tbody>
</table>

**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 |
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 cuspsids 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
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 protuberance contains all the structural elements of a tooth: enamel, dentin, and pulp tissue. 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
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

**DISCREPANCY INDEX WORKSHEET**

<table>
<thead>
<tr>
<th>CASE #</th>
<th>PATIENT</th>
<th>TOTAL D.I. SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>18</td>
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**OVERJET**

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<th>Points</th>
</tr>
</thead>
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<tr>
<td>0 mm. (edge-to-edge)</td>
<td>1 pt.</td>
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<tr>
<td>1 – 3 mm.</td>
<td>0 pts.</td>
</tr>
<tr>
<td>3.1 – 5 mm.</td>
<td>2 pts.</td>
</tr>
<tr>
<td>5.1 – 7 mm.</td>
<td>3 pts.</td>
</tr>
<tr>
<td>7.1 – 9 mm.</td>
<td>4 pts.</td>
</tr>
<tr>
<td>&gt; 9 mm.</td>
<td>5 pts.</td>
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</table>

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

**OVERBITE**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 3 mm.</td>
<td>0 pts.</td>
</tr>
<tr>
<td>3.1 – 5 mm.</td>
<td>2 pts.</td>
</tr>
<tr>
<td>5.1 – 7 mm.</td>
<td>3 pts.</td>
</tr>
<tr>
<td>Impinging (100%)</td>
<td>5 pts.</td>
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Total = 2

**ANTERIOR OPEN BITE**

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<thead>
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<th>Measurement</th>
<th>Points</th>
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<tbody>
<tr>
<td>0 mm. (edge-to-edge), 1 pt. per tooth</td>
<td></td>
</tr>
<tr>
<td>then 1 pt. per additional full mm. per tooth</td>
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Total = 0

**LATERAL OPEN BITE**

<table>
<thead>
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<th>Points</th>
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</thead>
<tbody>
<tr>
<td>2 pts. per mm. per tooth</td>
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Total = 0

**CROWDING** (only one arch)

<table>
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<tr>
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<td>1 pt.</td>
</tr>
<tr>
<td>3.1 – 5 mm.</td>
<td>2 pts.</td>
</tr>
<tr>
<td>5.1 – 7 mm.</td>
<td>4 pts.</td>
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<tr>
<td>&gt; 7 mm.</td>
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Total = 4

**OCCLUSION**

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<td>Class I to end on</td>
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<td>End on Class II or III</td>
<td>2 pts. per side</td>
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<tr>
<td>Full Class II or III</td>
<td>4 pts. per side</td>
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<td>Beyond Class II or III</td>
<td>1 pt. per mm. additional</td>
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Total = 4

**LINGUAL POSTERIOR X-BITE**

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<tbody>
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**BUCCAL POSTERIOR X-BITE**

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<th>Measurement</th>
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<td>Total = 0</td>
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**CEPHALOMETRICS** (See Instructions)

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<tbody>
<tr>
<td>ANB ≥ 6° or ≤ -2°</td>
<td>4 pts.</td>
</tr>
<tr>
<td>SN-MP ≥ 38°</td>
<td>2 pts.</td>
</tr>
<tr>
<td>Each degree &gt; 38°</td>
<td>Total = 0</td>
</tr>
<tr>
<td>≤ 26°</td>
<td>1 pt.</td>
</tr>
<tr>
<td>Each degree &lt; -2°</td>
<td>Total = 1</td>
</tr>
<tr>
<td>Each degree &gt; 6°</td>
<td>Total = 1</td>
</tr>
<tr>
<td>Each degree &lt; 26°</td>
<td>Total = 1</td>
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<tr>
<td>1 to MP ≥ 99°</td>
<td>1 pt.</td>
</tr>
<tr>
<td>Each degree &gt; 99°</td>
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**OTHER** (See Instructions)

<table>
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<th>Measurement</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supernumerary teeth</td>
<td>x 1 pt. =</td>
</tr>
<tr>
<td>Ankylosis of perm. teeth</td>
<td>x 2 pts. =</td>
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<tr>
<td>Anomalous morphology</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>Impaction (except 3rd molars)</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>Midline discrepancy (≥3mm)</td>
<td>@ 2 pts. =</td>
</tr>
<tr>
<td>Missing teeth (except 3rd molars)</td>
<td>x 1 pts. =</td>
</tr>
<tr>
<td>Missing teeth, congenital</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>Spacing (4 or more, per arch)</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>Spacing (Mx cent. diastema ≥ 2mm)</td>
<td>@ 2 pts. =</td>
</tr>
<tr>
<td>Tooth transposition</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>Skeletal asymmetry (nonsurgical tx)</td>
<td>@ 3 pts. =</td>
</tr>
<tr>
<td>Addl. treatment complexities</td>
<td>x 2 pts. = 2</td>
</tr>
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Identify:

Total = 4

**EXAM YEAR**

<table>
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</table>
ABO Cast-Radiograph Evaluation (Rev.6-1-08)

Case #  Patient Lee

Total Score: 15

Alignment/Rotations

Marginal Ridges

Buccolingual Inclination

Overjet

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.
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.

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.
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):
- Vertical: Maintain
- Transverse: Maintain

Mandible (all three planes):
- 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 slight extrude and protraction of the mandibular molars.

Bilateral OrthoBoneScrews® inserted into the infrazygomatic 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.
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 reposition 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 odontoplasty 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. 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.

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.
upper archwire was sectioned distal to the bicuspid. 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 indicating 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 patients, 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 ABO 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.”
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 relative 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 recovered, 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
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 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

impaction Discrepancy Index iDI

1. Angulation of the canine to the midline in degree

Grade 1: $0^\circ \sim 15^\circ$ = 1 pt.
Grade 2: $16^\circ \sim 30^\circ$ = 2 pts.
Grade 3: $\geq 31^\circ$ = 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 root width = 3 pts.
Grade 4: Complete overlap of root width or more = 4 pts.

Total = 4
impaction Discrepancy Index \( \text{IDI} \)

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

2. Root resorption of the recovered and adjacent teeth

Total = 2
### DISCREPANCY INDEX WORKSHEET

**OVERJET**

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<tr>
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<tr>
<td>1 – 3 mm.</td>
<td>0 pts.</td>
</tr>
<tr>
<td>3.1 – 5 mm.</td>
<td>2 pts.</td>
</tr>
<tr>
<td>5.1 – 7 mm.</td>
<td>3 pts.</td>
</tr>
<tr>
<td>7.1 – 9 mm.</td>
<td>4 pts.</td>
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<tr>
<td>&gt; 9 mm.</td>
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Negative OJ (x-bite) 1 pt. per mm. per tooth = **2** points

**OVERBITE**

<table>
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<th>Points</th>
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<tr>
<td>3.1 – 5 mm.</td>
<td>2 pts.</td>
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<tr>
<td>5.1 – 7 mm.</td>
<td>3 pts.</td>
</tr>
<tr>
<td>Impinging (100%)</td>
<td>5 pts.</td>
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Total = **2** points

**ANTERIOR OPEN BITE**

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<tr>
<td>then 1 pt. per additional full mm. per tooth</td>
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</table>

Total = **0** points

**LATERAL OPEN BITE**

2 pts. per mm. per tooth

Total = **0** points

**CROWDING** (only one arch)

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<tr>
<td>3.1 – 5 mm.</td>
<td>2 pts.</td>
</tr>
<tr>
<td>5.1 – 7 mm.</td>
<td>4 pts.</td>
</tr>
<tr>
<td>&gt; 7 mm.</td>
<td>7 pts.</td>
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Total = **2** points

**OCCLUSION**

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<tr>
<td>End on Class II or III</td>
<td>2 pts. per side</td>
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<tr>
<td>Full Class II or III</td>
<td>4 pts. per side</td>
</tr>
<tr>
<td>Beyond Class II or III</td>
<td>1 pt. per mm. additional</td>
</tr>
</tbody>
</table>

Total = **2** points

**LINGUAL POSTERIOR X-BITE**

1 pt. per tooth

Total = **0** points

**BUCCAL POSTERIOR X-BITE**

2 pts. per tooth

Total = **0** points

**CEPHALOMETRICS** (See Instructions)

<table>
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<tr>
<th>Measurement</th>
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<tr>
<td>Each degree &gt; 6°</td>
<td>x 1 pt. =</td>
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<tr>
<td>SN-MP</td>
<td>2 pts.</td>
</tr>
<tr>
<td>Each degree &gt; 38°</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>≤ 26°</td>
<td>1 pt.</td>
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<tr>
<td>Each degree &lt; 26°</td>
<td>x 1 pt. =</td>
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<tr>
<td>1 to MP ≥ 99°</td>
<td>1 pt.</td>
</tr>
<tr>
<td>Each degree &gt; 99°</td>
<td>x 1 pt. =</td>
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Total = **0** points

**OTHER** (See Instructions)

<table>
<thead>
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<th>Condition</th>
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<tbody>
<tr>
<td>Supernumerary teeth</td>
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<tr>
<td>Ankylosis of perm. teeth</td>
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<td>Anomalous morphology</td>
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<tr>
<td>Impaction (except 3rd molars)</td>
<td>@ 2 pts. =</td>
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<tr>
<td>Midline discrepancy (≥3mm)</td>
<td>@ 2 pts. =</td>
</tr>
<tr>
<td>Missing teeth (except 3rd molars)</td>
<td>x 1 pt. =</td>
</tr>
<tr>
<td>Missing teeth, congenital</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>Spacing (4 or more, per arch)</td>
<td>x 2 pts. =</td>
</tr>
<tr>
<td>Spacing (Mx cent. diastema ≥ 2mm)</td>
<td>@ 2 pts. =</td>
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<tr>
<td>Tooth transposition</td>
<td>x 2 pts. =</td>
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<tr>
<td>Skeletal asymmetry (nonsurgical tx) iD1 @ 3 pts. =</td>
<td></td>
</tr>
<tr>
<td>Addl. treatment complexities</td>
<td>x 2 pts. =</td>
</tr>
</tbody>
</table>

Identify:

Total = **16** points

**Total D.I. Score**

**10 + 16 = 26**
Examiners will verify measurements in each parameter.

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

Alignment/Rotations

Marginal Ridges

Buccolingual Inclination

Overjet

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!
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.
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>August 14, 2010</td>
<td>9:00—12:30</td>
<td>Chair-side observation</td>
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<tr>
<td></td>
<td>12:30—14:00</td>
<td>Lunch</td>
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<td></td>
<td>14:00—14:20</td>
<td>Introduction of Beethoven and Anderson Clinic</td>
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<td></td>
<td>14:20—16:00</td>
<td>Damon Q Essentials</td>
<td></td>
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<tr>
<td></td>
<td>17:30—</td>
<td>Dinner</td>
<td></td>
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<tr>
<td>August 15, 2010</td>
<td>09:00—10:30</td>
<td>Optimized Orthodontic Treatment I</td>
<td>Dr. Chris Chang</td>
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<tr>
<td></td>
<td>10:30—11:00</td>
<td>Break</td>
<td></td>
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<tr>
<td></td>
<td>11:00—12:00</td>
<td>Optimized Orthodontic Treatment II</td>
<td>Dr. Chris Chang</td>
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<tr>
<td></td>
<td>12:00—</td>
<td>Lunch</td>
<td>Taipei tour</td>
</tr>
<tr>
<td>August 16, 2010</td>
<td>09:00—10:00</td>
<td>OBS tips</td>
<td>Dr. Chris Chang</td>
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<td></td>
<td>10:00—10:10</td>
<td>Break</td>
<td></td>
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<tr>
<td></td>
<td>10:10—12:30</td>
<td>Damon +Screw</td>
<td>Dr. John Lin</td>
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<tr>
<td></td>
<td>12:30—14:00</td>
<td>Lunch</td>
<td></td>
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<tr>
<td></td>
<td>14:00—15:00</td>
<td>Model Practice</td>
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<td></td>
<td>15:00—19:00</td>
<td>Chair-side observation</td>
<td></td>
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<tr>
<td>August 17, 2010</td>
<td>09:00—10:30</td>
<td>Introduction of Keynote: Organize your patient files for presentation</td>
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<td></td>
<td>10:30—10:45</td>
<td>Break</td>
<td></td>
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<td></td>
<td>10:45—12:00</td>
<td>Key Presentation Principles I</td>
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<td></td>
<td>12:00—13:30</td>
<td>Lunch</td>
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<td></td>
<td>13:30—14:30</td>
<td>Key Presentation Principles II</td>
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<tr>
<td></td>
<td>15:00—16:00</td>
<td>Key Presentation Principles III</td>
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</table>
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.
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.
貝多芬團隊

A Learning Organization

文 / 陳建煥、徐玉玲、黃思涵、蘇荃瑜

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」，在第五個頜序就會自動出現“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、廣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櫥，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瀰漫，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豔，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，並且前方有足夠的階梯空間，方便醫師與家長溝通，或是讓候診病患在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，主要是放置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料，舉凡病前、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。

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，按步就班的實踐張醫師為病人量身訂作的治療計劃，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、治療計劃、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治療，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！

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，一方面增加診所清潔之感，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。

圖像式病歷

病歷第一页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4~6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材，張醫師的教學活潑而且與門
診同步，您很難看到年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，及時的帶入當天的課程主題，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，就连
國外的醫師也都踊躍報名參加 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，張醫師就有機會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
也出版了一份專著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
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。
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，年長者有層層專科解決您「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，因為都是團隊式診治，團隊醫師共同來照顧。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，就像鋼筆永遠需要水泥一樣，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！

助理正在利用電腦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，社區的孩童牙齒痛都需要跑到市區才能到專科的照顧。院長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。因為聽到社區眾心聲，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為命，將耳熟能詳的故事，如國王的新衣、賣火柴的小女孩、拇指姑娘等入診所的場景中，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，因為成長的過程中，除了在心理上漸漸與小朋友建立關係之外，在口腔顱面發育的部份更希望能透過口內外照的收集與追蹤，充分掌握整體口腔健康，骨骼生長的情況，所以，為了達到這個目的，每位孩子的資料完整收集、電腦輸入方式以及大量資訊的統合整理，安徒生都採用最先進的軟體硬體技術，高畫質數位單眼相機與即時無線傳輸直接到個別診歷，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，希望課程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更切身相關的領域，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。
金牛顿藝術科技 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，想學習新技術這麼多，永遠抽不出足夠的時間讓我們好好坐下，完整地聽一場演講或是從頭到尾讀完一本新書。金牛頓藝術科技將與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優化行動學習工具，已經掀起國際矯正界的一場學習旋風。

What is Your Tx. Plan?

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，來增強高效率習的效率。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之外，也負責設計、規劃、維護貝多芬牙醫團隊的教學資訊環境，建立全新的、獨立的、時時報表化的、方便查詢和取得的學習系統。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，診療有效的助理們有些協同醫師執行手術上的步驟，有些則進行手術過程的攝影及錄影。術手術過程結束後，助理立刻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程，之後再繼續利用這個案子與張醫師進行進一步的專案個案討論，討論結束後立刻將這個案例的電子檔案燒成光碟，讓張醫師和他的女婿可以帶回去去做進一步的研究。
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。

貝多芬未來展望-植牙中心

近年來，貝多芬病人結構逐漸由成年轉型成人比例如今越來越多，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正外，牙周病，大範圍的缺牙，舊有假牙補織物拆舊以及矯正後的植牙或假牙補織評估，重建。因此貝多芬有義務，也必須為成人提供矯正前後作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；牙周與補織，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牙科專業。

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，也對應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。
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

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十大演講秘訣
2. 準備演講的九個步驟
3. 多媒體影片剪輯

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
主辦單位 | 高雄市牙醫師公會
協辦單位 | 潤傑企業股份有限公司
主  題 | 適入專科整合～貝多芬團隊六週回顧與經驗分享
時  間 | 1999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 | 潤傑 07-5361701、04-23058915  公會 07-3350350
講  師 | 張慧男、鄭錦隆、邱上珍、蘇奎瑋、蔡詠德、黃瓊璋、吳致賢、蕭浩宜、李昆銘、徐玉玲

9:00 - 10:30 [張慧男] 現代必學的矯正技術

10:50 - 12:30 [鄭錦隆] 高品質矯正工標準
[邱上珍] 矯正後的牙周美學狀態
[蘇奎瑋] 矯正術後保健與衛教
[蔡詠德] 前牙美學術面觀
[黃瓊璋] 矯正、植牙完美融合

13:30 - 14:50 [吳致賢] 正顎手術案例分享
[謝浩宜 & 李育銘] 全口整合性牙科
[楊浩宜] 整合牙科治療
[徐玉玲] 重新思考兒童矯正治療時機

15:10 - 16:40 [張慧男] 矯正與植牙完美結合的關鍵報告

16:40 - 17:00 綜合討論
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.

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. 1-7 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 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 2

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 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. 2-6 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.
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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，黃嘉萍，邱聖賢 醫師
補綴顧問：方景亮 主任

參考書籍
Interdisciplinary Treatment Planning
Contemporary Implant Dentistry 3rd, Misch
固定式美觀植體支持性歯復補綴物

Fixed Esthetic Implant Supported Restorations

Dr. Baldwin W Marchack

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歯復 (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顆氧化鋯全瓷冠 (Alumina coping crown)。但氧化鋯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
了超過1600顆氧化鋯全瓷冠 (Zirconia coping crown)。從氧化鋯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、並以蒸氣清潔 (Steam cleaning) 去除氧化鋯表面油溼及污染、再以陶瓷烤塗烘烤 (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. 仔細校正陶瓷烤塗溫度 (低10°C的差距可降低陶瓷30%強度)：為此原因，Dr. Marchack 甚至換了新烤塗，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，特別是在功能性咬合及主要受力咬點處 (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頸側水平接合關節以

![圖組二、氧化鋯全瓷冠功能性咬合及主要受力咬點處陶瓷斷裂圖](image)
It's all in the design of the framework!

“Normal” Relationship  “End of End” Relationship  “Crossbite” Relationship

“A Clinician’s Interpretation of Tooth Preparation and the Design of Metal Substructures for Metal-Ceramic Restorations”

Lloyd Miller, 1977

“Normal” Relationship  “End of End” Relationship  “Crossbite” Relationship

Adequate Support Under Cusps, Under Marginal Ridges & On Lingual

氧化鋯全瓷牙橋設計

當氧化鋯全瓷牙橋獲得將近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，所有修磨牙都是唇台緣並用玻璃離子黏著劑黏合，全瓷牙橋成功與否則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
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%。

至於氧化鋯與非金屬的磨耗，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提出圈周應力 (Hoop stresses) 也是造成傳統金屬陶瓷冠顳頰部三分之一陶瓷破壞的因素之一。

全氧化鋯牙冠 (All-in-Z® Crown) (圖八、九、十)

有了可接受的氧化鋯與非金屬間的磨耗值及避免圈周應力影響，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顧美觀及耐用。

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
護物。精確取模後，模型轉移至咬合器上，利用樹脂將最終層複體雕塑成形，再回割以提供陶瓷足夠厚度，利
用電腦輔助掃描樹脂成形，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
圖六、Nobel Biocare CAD/CAM 軟體設計氧化鋯內冠部份

圖七、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)

圖九、Dr. Marchack's All-in-Z® Crown (全氧化鋯牙冠，下顎第二大臼齒) (模型照片)

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

圖組八、Dr. Marchack's All-in-Z® Crown (全氧化鋯牙冠)

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)

柚，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年二月美國口腔詹敘年會海報競賽，以“Fabrication of milled zirconia screw-retained fixed maxillary and mandibular complete dentures: clinical and laboratory procedures”贏得首獎。

赢得首獎的一週後，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：赝復體完成後，若被外力或本身是磨牙者導致的陶瓷破裂，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，再製做成完成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複體，不是未來複體補設的趨勢，而是現在就要採行的治療方式。
INTERDISCIPLINARY TREATMENT

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

Dr. Marchack’s Modified All-in-Z® Crown (修正型全氧化鋯全瓷冠，上顎第一大臼齒僅頜側非功能性側烤瓷)

Dr. Marchack’s All-in-Z® Implant Bridge ( resin pattern, cut-back for zirconia framework, resin framework scanned)

All-in-Z® Implant Bridge 氧化鋯支架頜側及咬合面觀
All-in-Z® Implant Bridge


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

Precision of CNC-milled titanium frameworks for implant treatment in the edentulous jaw.


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,
Wilsire Grand Hotel, 930 Wilshire Blvd, Los Angeles, CA 90017.

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Microbiological and Clinical Aspects in Peri-implant Diseases

Dr. Casey Chen

Contents:

1. Peri-implant disease and periodontal disease
2. Implant-oral tissue interface
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9. Microbial etiology of periodontitis
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12. Periodontal bacteria associated with teeth and dental implant
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20. Summary

According to the above 20 contents (Contents), we will introduce and discuss each section.
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，諸如刷牙出血 (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，卻未見有歴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，才足夠的生物寬度形成 (Fig 3b)。
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合組織 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) 畢竟演變成植體周圍炎 (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。

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 的報告顯示全國美國 25 ~ 34 歲中年族群當中，按照不同嚴重度而分，最輕微 (牙周附着喪失 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) 做調查，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；結果發現約有八成人以上受測者有 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；然而對植牙的使用而言，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.

Sources: Adapted from NHIS 1996, Burt and Ekland 1999.

Fig 7.

Fig 8.
8. Risk indicators for peri-implant disease

- History of Periodontitis
- Poorly controlled diabetes
- Subjects with (+) IL-1 genotype and a heavy smoker: More implant complications
- Alcohol consumption > 10 g / day
- Implant surface selection: More bone loss associated with rough surface implant

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. 牙周囊袋中從牙齦表面的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

Microbial etiology of peri-implantitis is a complex process involving a variety of microorganisms. These bacteria can cause inflammation and destruction of peri-implant bone, resulting in peri-implantitis. The microbial composition can vary depending on the patient, the specific implant, and the local environment.

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

Peri-implantitis and periodontitis are biofilm-associated infections. Biofilms are communities of microorganisms that adhere to a surface and are protected by extracellular polymeric substances (EPS). These biofilms can form on the surface of implants and teeth, and they can contribute to the development of periodontal disease and peri-implantitis.

Figure 11 illustrates the microbial composition associated with teeth and dental implants. The graph shows the change in microbial counts over time, with different colors representing different bacterial species. The counts are shown for implants and teeth at 2, 4, 13, and 26 weeks. The graph clearly demonstrates the persistence of certain bacterial species over time, indicating the importance of long-term antimicrobial therapy in managing these infections.
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：

Microbial Etiology of Peri-implantitis

![Graph showing microbial etiology of peri-implantitis](image_url)

*Fig 12.*
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
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 recomposite 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.
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.
Q1: G (+) 细菌在植体会周围炎患处比例较高，药物治疗上是否有特殊意义？
A：例如 Staphylococcus oralis 多见于 peri-implantitis，而较少见于 periodontitis，但在治疗的原则而言，机械性清除致病菌原，要远比用药物治疗效果好。

Q2：植牙周病再生性手术配合 citric acid 表面处理的效果？
A：由于 rough surface 在操作中较难深入，所以 citric acid 表面处理的效果是难预测的。

Q3：Laser 对于 peri-implantitis 治疗上的效果？
A：不能仅使用雷射，必须配合机械性清除致病菌的操作准则，因为雷射对于感染的植体表面并无所谓的 decontamination 的效果。

Q4：Platform switching implant 对于 peri-implantitis 预防上是否有帮助？
A：Platform switching 的设计可藉由增加 biological width，以及防止 early bone loss 来达到减少 peri-implantitis 发生的机率 (Fig 19)。

Q5：植牙周病再生手術的 criteria？
A：很难的问题，原则要保留组织结构，且尽量避免伤害性大的植体移除手術，尤其在美观区域植体的处理更要谨慎。

Fig 18. Disease Severity

Fig 19. Platform switching 的设计 (最右植体红圈标示处)
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.

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**Soft Tissue Graft**

**Vertical Vestibular Incision Subperiosteal Technique Access (VISTA)**

Beethoven Orthodontic Center, Taiwan

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:
(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 parallel 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)
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。
貝多芬矯正之旅

如何可以快速的學會矯正？我想這就是很多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變課程內容。同樣的課題，有時候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完檔案，它就成為一個實質看得到的東西，而不僅僅是在腦子裡的念頭而已。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，我自己這個電腦白癡，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。每一個人都有秩序的做自己該做的事，雖然緊張但一點也不混亂，整個診所瀰漫著愉快的氣氛。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穫，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

總是有抱怨助理沒默契，病患不懂你的價值，與人交談往往難同頻講……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。這不只是上一門電腦課，而是開拓人生視野一扇窗的機會。

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，經由大量病例細膩精準的解說，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，讓你不但辨識背後的原理，更能建立完整的思考邏輯。自這一系列的課程，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。

臨床矯正治療鎮定的利器，關於OBS的二三事

兵家所謂「工欲善其事，必先利其器」，敵人在OBS的使用上，深有同感。由於先前MIA的失敗率很高，幸好有OBS，彷彿他難過故知，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，來一趟員林的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！
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
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角色扮演派對
Cosplay PARTY
7/26~10/31

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### 課程

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<tr>
<td>入門推廣</td>
<td>iWork系列：簡單上手的多媒體簡報</td>
<td>Keynote</td>
<td>7/11, 8/15（日）15:00～16:00</td>
<td>樂於嘗試生活科技應用者</td>
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<tr>
<td>入門推廣</td>
<td>iWork系列：整理表格數據的好幫手</td>
<td>Numbers</td>
<td>7/18, 8/22（日）15:00～16:00</td>
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<td>入門推廣</td>
<td>iWork系列：製作個人化的印刷品</td>
<td>Pages</td>
<td>7/25, 8/29（日）15:00～16:00</td>
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<tr>
<td>專業簡報</td>
<td>Keynote簡報法 series 1</td>
<td>1. 常見簡報謬誤 2. Keynote 入門</td>
<td>11月18日（四）09:00～16:00</td>
<td>科技人、醫師、教師、學生</td>
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<tr>
<td>專業簡報</td>
<td>Keynote簡報法 series 2</td>
<td>Kokich的10大演講秘訣 1. 多媒體影像處理 2. 簡報設計</td>
<td>12月16日（四）09:00～17:00</td>
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<td>專業簡報</td>
<td>Keynote簡報法 series 3</td>
<td>How to Wow’em like Steve Jobs? 1. 賈伯斯演講秘訣 2. 簡報設計進階應用</td>
<td>2011年1月13日（四）09:00～17:00</td>
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<tr>
<td>International</td>
<td>Damon and OBS workshop</td>
<td>1.Damon System 2. OrthoBoneScrew</td>
<td>8/14-16, 12/7-9</td>
<td>International Orthodontists</td>
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<tr>
<td>International</td>
<td>OrthoBoneScrew Workshop</td>
<td>OBS lecture Hands-on Workshop</td>
<td>9/17 (五)</td>
<td>矯正醫師</td>
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</tbody>
</table>

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： 金牛鎮藝術科技教育中心（交大華遠2樓） 新竹市建中一路25號（巴士馬偕醫院下車步行5分鐘）
報名專線： 03-5735676 黃小姐  金牛鎮網頁： www.newtonsa.com.tw
OrthoBoneScrew

Bone

Simplest System

Easy selection & manipulation

Ortho

Rectangular hole

Secure rectangular wire for 3D force control

Screw

Mushroom Head

Maximum patient comfort

Easy fit for power chain & NT coil spring

<table>
<thead>
<tr>
<th>Screw types</th>
<th>Area</th>
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<tbody>
<tr>
<td>1</td>
<td>1.5 x 8 mm without holes</td>
</tr>
<tr>
<td>2</td>
<td>2 x 12 mm without holes</td>
</tr>
<tr>
<td>3</td>
<td>2 x 12 mm with holes</td>
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</tbody>
</table>

Order: +886-3-573-5676 Ms. OBS
For more information visit http://orthobonescrew.com