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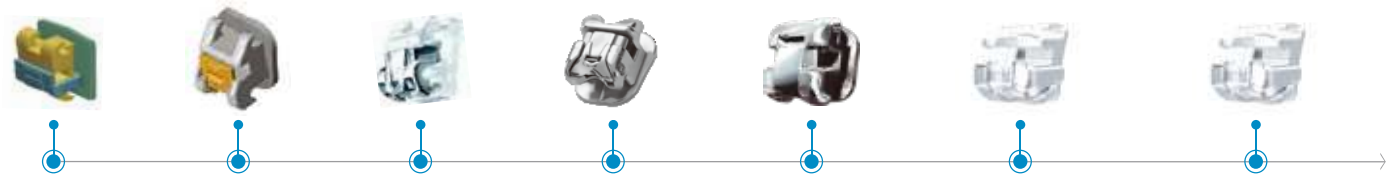

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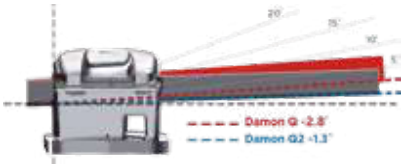

VERSATILE. CONVENIENT.

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DAMON™ Q2	NT$149,999	NT$369,999
DAMON™ CLEAR 2	NT$189,999	NT$459,999

Damon Q2/ Clear2 Brackets	200 個	600 個
Bondable Tubes .22 (G/O , Accent , Peerless)	80 個	240 個
Damon Copper Ni-Ti Wire size .014 / .014 x .025	40 條	120 條
Damon Stainless Steel Wire size .016 x .025	20 條	60 條
Damon TMA Low-Friction Wire size .017 x .025	20 條	60 條

2025 一年一度 Damon Master Program


+


全新改版的 2025 年貝多芬高效 Damon 矯正大師系列課程，是由國際知名講師張慧男醫師親自規劃及授課，課程特色強調由臨床病例帶動診斷、分析、治療計畫擬定與執行技巧，本年度亦特別加入最新的**數位矯正與隱形牙套**的內容，並邀請了貝多芬牙科集團各院院長演講特別矯正專題。

此外，透過數位影片反覆觀看，結合矯正與電腦教學，課堂助教協助操作，讓學員在短時間能快速上手，感染「熱愛矯正學，熱愛學矯正」的熱情。

名額有限，一年僅有一次機會在台完整體驗 Damon 矯正大師課程，錯過只能等明年囉！

Module 1 - 3/13

1. Selecting your ideal first case
2. Bonding position
3. Bonding + BT + ceph tracing
4. TADs + space closing + hook + spring
5. Finishing bending & fixed retainer

Practice: Clinical photography（黃亭雅, 陳韻如醫師）

Module 2 - 4/17

1. Four stages of efficient orthodontic treatment
2. Simple and effective anchorage system
3. Extraction vs. non-extraction analysis

Practice: Patient photo management（金牛頓工程師）

Module 3 - 5/1

1. Soft & hard tissue diagnostic analysis
2. Big overjet correction
3. Damon diagnosis & fine-tuning

Practice: Ceph tracing（金牛頓工程師）

Module 4 - 5/15

1. Excellent finishing
2. Retention & relapse

Practice: Ceph superimposition & measurement（金牛頓工程師）

Module 5 - 5/22

1. Simplify your system
2. Extraction vs. non-extraction

Practice: Case report demo（陳俊宏醫師）

▲ **Computer training (Mac): 1:30-3:00 pm**

Module 6 - 6/5

1. Class III correction
2. Class II correction

Topic: Early orthodontic treatment（曾淑萍醫師）

Module 7 - 6/19

1. Upper impaction
2. Lower impaction
3. Gummy smile correction

Topic: Modified VISTA（蘇筌瑋醫師）

Module 8 - 7/3

1. ABO DI, CRE workshop (林彥君醫師)
2. Open bite

Topic: Ortho-viewed interdisciplinary treatment（徐重興醫師）

Module 9 - 7/17

1. Implant-ortho combined treatment
2. Asymmetry

Topic: Impacted cuspid treatment（張譯文, 張瑜珍, 黃亭雅, 陳韻如醫師）

Module 10 - 7/31

1. Minor surgeries in orthodontics
2. Digital orthodontics

Topic: Modified 2X4 appliance in ortho treatment（李亮賢醫師）

Module 11 - 8/14

1. Aligner design
2. Comprehensive aligner treatment
3. Aligner & its challenges

Topic: Pre-aligner treatment（林詩詠醫師）

▲ **Special lecture: 1:30-3:00 pm**

時間：週四全天（9:20 am - 5:00 pm）

地點：金牛頓藝術科技（新竹市建中一路 25 號 2 樓）

費用含課程視訊*、iPad、課程電子書與材料。

*贈送之課程視訊提供兩年時間串流觀看。

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Transposed Maxillary Canine Impactions with Gingival Recession Treated with the Vertical Incision Subperiosteal Tunnel Access (VISTA) Technique and Infrazygomatic Crests (IZC) Screws

Abstract

Introduction: *A 10-year 6-month-old girl presented with impacted and transposed maxillary canines.*

Diagnosis: *The patient was skeletal Class I (SNA 84˚; SNB 81˚; ANB 3˚) with bilateral Class I molar relationships. Both maxillary deciduous canines (URc and ULc) were present. Maxillary right canine was incompletely transposed while maxillary left canine was completely transposed. The Discrepancy Index (DI) was 9.*

Treatment: *The impacted and transposed canines were treated using the vertical incision subperiosteal tunnel access (VISTA) technique and custom 3D lever arms anchored by an OrthoBoneScrew® (OBS) inserted in the infrazygomatic crest (IZC).*

Discussion: *After 40 months of active treatment, both the incomplete (UR3) and complete (UL3) transposed impacted canines were successfully aligned into the arch. Although gingival recession on both maxillary canines was observed after the eruption, they were treated with the VISTA technique to recover the gingiva. The Cast-Radiograph Evaluation (CRE) was 4, and the dental esthetic (Pink & White) score was 4.*

Conclusion: *The VISTA surgical exposure is a unique approach for submucosal movement of the impactions. Skeletal anchorage using OBS with a 3D lever arm provides an independent force system for retracting both impactions. (Reprinted with permission from Perio Clínica 2024;28:46-66; J Digital Orthod 2025;76:38-60)*

Key words:
Impacted maxillary canine, infrazygomatic crest miniscrews, bone screw anchorage, vertical incision subperiosteal tunnel access (VISTA), 3D lever-arm, root resorption, gingival recession.

Introduction

The dental nomenclature for this report is a modified Palmer notation. Upper (U) and lower (L) arches, as well as the right (R) and left (L) sides, define four oral quadrants: UR, UL, LR, and LL. Teeth are numbered 1-8 from the midline in each quadrant, and deciduous teeth are delineated a-e.

Tooth transposition is the positional interchange of two adjacent teeth that can be divided into two categories: complete or incomplete.[1,2] A complete transposition is defined when both teeth are completely transposed (i.e. crowns and roots), and incomplete when only the crowns or roots have interchanged their positions. The overall prevalence of transposition is about 0.4%.[3] Maxillary permanent canines are the teeth most commonly affected.[4]

In this present case, both maxillary right and left canines were impacted. UR3 was incompletely transposed, its crown was located ectopically in-between the roots of UR1 and UR2 while the root apex was located above the URc. UL3 was

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* *Joint second author. Lily Y. Chen and Jenny Chang have equal contributions to this article.*

Fig. 1: *Pre-treatment facial and intraoral photographs*

completely transposed, both crown and root apex were ectopically positioned in-between UL1 and UL2.[1,5,6] Since both canines were ectopically positioned, surgical intervention with orthodontic traction forces was necessary. A modified VISTA technique[7-11] was performed with extra-alveolar bone screws, which provided anchorage for 3D lever arms to properly position the impacted canines into the arch.

History and Etiology

A 10-year 6-month-old girl presented with her parents to evaluate unerupted bilateral maxillary canines (Fig. 1). Clinical examination showed both maxillary deciduous canines were retained in the oral cavity and U2s were tilted. Bilateral Class I molar relationships were noted (Figs. 2 and 3). The panoramic radiograph and cone beam computed tomography (CBCT) image revealed the position and direction of the impacted maxillary canines (Figs. 4 and 5). The UR3 was labially impacted and was in incomplete transposition with its crown located between the UR1 and UR2, while its root remained in a normal position. The UL3 was also labially impacted in complete transposition, meaning both the crown and root were ectopically positioned between UL1 and UL2.

Diagnosis

Skeletal:

Skeletal Class I: *SNA, 84˚; SNB, 81˚; ANB, 3˚*

Mandibular Plane Angle: *SN-MP, 32˚; FMA, 25˚*

Fig. 2: *Pre-treatment study models*

Fig. 3: *Pre-treatment cephalometric radiograph*

Fig. 4: *Pre-treatment panoramic radiograph*

Dental:

Occlusion: *Class I molar*

Overjet: *3 mm*

Upper incisors: *Within normal limits (WNL) (U1-NA, 3 mm; U1-SN, 104˚)*

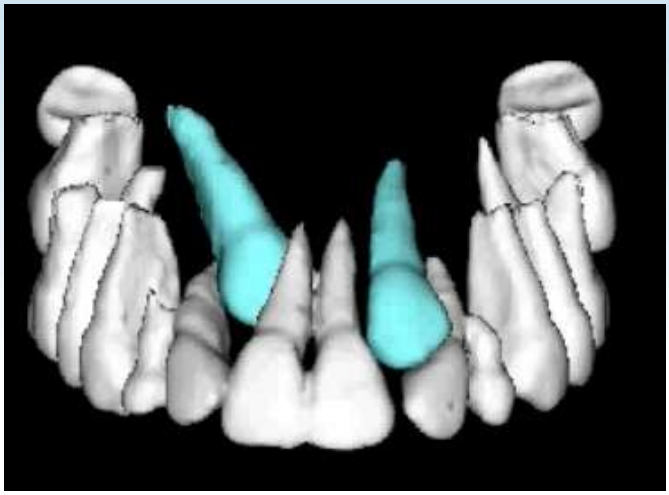

Fig.5:
Pre-treatment CBCT images of the maxillary dentition shows a labially impacted UL3 positioned between the roots of UL1 and UL2.

Lower incisors: *Increased axial inclination (L1-NB, 6 mm; L1-MP, 95˚)*

Impaction: *Labially impacted U3s; UR3 incomplete transposition, UL3 complete transposition*

Facial: *Slightly protrusive lower lip (upper/lower: 0 mm/ 4 mm to the E-line)*

The cephalometric summary is in Table 1. The American Board of Orthodontic (ABO) Discrepancy Index (DI) was 9 points as shown in the subsequent Worksheet 1.

Treatment objectives

1. Maintain Class I canine and molar relationships
2. Resolve the labially impacted maxillary canines
3. Attain an ideal overjet, overbite and facial esthetics.

CEPHALOMETRIC SUMMARY			
SKELETAL ANALYSIS			
	PRE-TX	POST-TX	DIFF.
SNA˚ (82˚)	84˚	85˚	1˚
SNB˚ (80˚)	81˚	82˚	1˚
ANB˚ (2˚)	3˚	3˚	0˚
SN-MP˚ (32˚)	32˚	33˚	1˚
FMA˚ (25˚)	25˚	26˚	1˚
DENTAL ANALYSIS			
U1 TO NA mm (4mm)	3	5	2
U1 TO SN˚ (104˚)	104˚	114˚	10˚
L1 TO NB mm (4mm)	6	7	1
L1 TO MP˚ (90˚)	95˚	98˚	3˚
FACIAL ANALYSIS			
E-LINE UL (-1mm)	0	0	0
E-LINE LL (0mm)	4	3	1
%FH: Na-ANS-Gn (53%)	56%	55%	1%
Convexity:G-Sn-Pg' (13˚)	10˚	10˚	0˚

Table 1: *Cephalometric Summary*

Treatment alternatives

Three treatment options were proposed using full fixed appliances:

Option 1: Non-extraction with modified VISTA and OBS 3D lever arm

Chang's extraction decision table was consulted to assess the necessity for extraction (Table 2).[12] Since the profile was nearly straight with mild crowding, non-extraction treatment was indicated. Extract only the deciduous canines (Ucs) and use the modified VISTA and OBS 3D lever arm technique to uncover and align the impacted U3s. Reposition each

	Ext	Non ✓
1. Profile	Protrusive	Straight
2. Md. angle	High	Low
3. Bite	Open	Deep
4. Ant. inclination	Flaring	Flat
5. Crowding	> 7 mm	None
6. Decay/ missing	Present	Impacted 13,23
7. P't perception	Ok	No
8. Etc...		

Table 2: *Chang's Extraction Decision Table*

impacted U3 with a 3D lever arm and power chain anchored to an IZC OBS (Fig. 6). The advantages are lower cost and better esthetics. However, this preferred option require the longest treatment time.

Option 2: Extract the impacted canines (U3s) and substitute with premolars (U4s)

Extract URc and ULc, surgically remove the impacted U3s, and finish in a bilateral molar Class II,

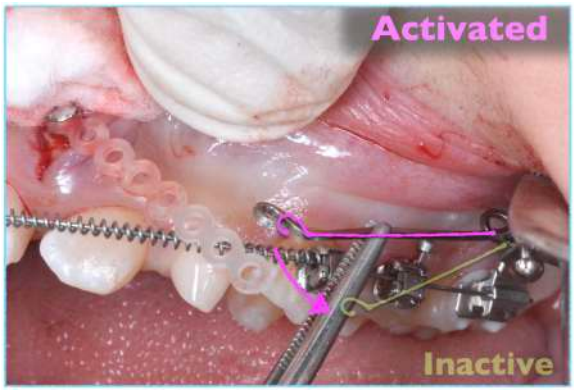

Fig. 6:
The 3D lever arm was activated by connected it onto the power chains (pink), and the tendency of the 3D lever arm wanting to bounce back to its original position (green) would then produce downward, backward, and outward forces.

which would decrease the duration and difficulty of the treatment. However, substituting the impacted UL3 with the adjacent first premolar would compromise the esthetics and function of the occlusion because of a lack of occlusal guidance, an unbalanced occlusion, dental arch asymmetry, compromised dental esthetics, and possibly temporomandibular joint disorder.[13]

Option 3: Extract the impacted canines (U3s) and substitute with implants

Surgically remove the impacted U3s and retain Ucs to maintain alveolar bone for future implant placement. Open spaces for maxillary canine implants to optimize dental alignment. Overall treatment timing is problematic because implant placement should be delayed until at least 18 years of age. The overall cost would also be much higher. The advantage is an esthetic and functional result with less orthodontics.

After thoroughly discussing all three options, the first treatment option was considered the most suitable treatment plan for both the patient and clinicians (Fig. 7).

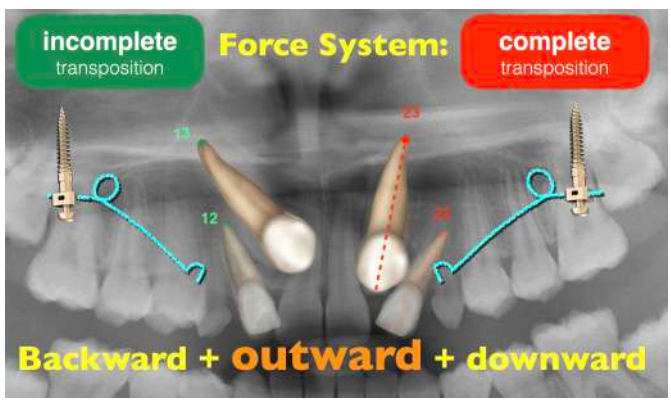

Fig. 7: *Proposed treatment (Option 1) in illustration*

Treatment Progress

A passive self-ligating (PSL) fixed appliance (Damon Q®, Ormco Corporation, Glendora, CA) was bonded on all maxillary teeth except for the UR2, UL2, UR3, and UL3, and a 0.014-in CuNiTi archwire was engaged in order to start the active treatment. Open coil springs were placed between the central incisor and the first premolar on both sides to maintain adequate space for the transposed impacted canines. The impacted canine was surgically uncovered with the VISTA technique and mechanics were applied with IZC screws and 3D lever arms, the independent force system designed by Chang.[8,10] Details for the surgical flap and force system design will be discussed later in this report.

The post-operative radiographs monitored the movement of the transposed canines (Fig. 8). After 4 months of activation, the 3D lever arms were removed after the impacted U3s erupted into the oral cavity. A backward (distal) and slightly outward force was applied when two new power chains (PCs) were attached from the button on the U3s to the mini-screws. The backward force from the PCs was supplemented with slightly outward (buccal) force from the extra-alveolar position of the mini-screw (Fig. 9).

From the 4th to 6th months, the PCs from U3s to the mini-screws were progressively activated at 1 month intervals to align the U3s.

In the 14th month of treatment, buttons were bonded on the distal surfaces of the U3s and PCs were attached from the buttons to the second

Fig. 8:
A panel of six radiographs shows the treatment progress of transposed canines. Each radiograph is labelled with the time in months since surgery and initiation of the traction (first number), and the number of months into active treatment (second number). Thus, the upper middle view (2/3) is the 2 months post-surgery radiograph performed 3 months into treatment. Note the U2s were not bonded with brackets during traction of the U3s in the first 6 months of treatment. Little root resorption of UR1, UR2 and UL2 can be observed (yellow arrow).

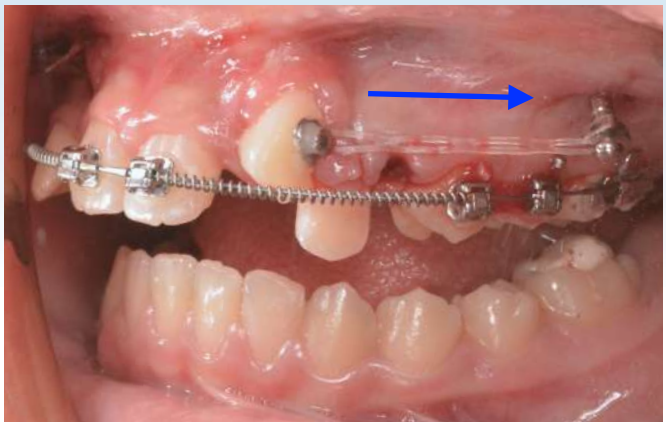

Fig. 9:
The backward and slight outward force provided by PC to the transposed canine.

molars to control the distal rotation of the U3s. Low-torque brackets were bonded on the UR3 and UL3 in the 19th month, and a 0.014-in CuNiTi archwire was placed for final alignment (Figs. 10-13).

Results

After 40 months of treatment, both the incompletely transposed (UR3) and completely transposed (UL3) impacted canines were successfully aligned into the arch. Slight root resorption was noted on UR1, UR2, and UL2 in the panoramic radiograph (Fig. 7). Gingival recession was present on both UR3 and UL3 so a VISTA procedure was performed to reestablish the keratinized tissue with connective tissue graft (CTG).

The dentition was well-aligned, with bilateral Class I canine and molar relationships. Despite inadequate occlusal contacts in the posterior section, it was decided that the patient should complete finishing with mastication movements to naturally settle the occlusion. This method was successful as observed in the 4-year follow-up records (Figs. 14 and 15).

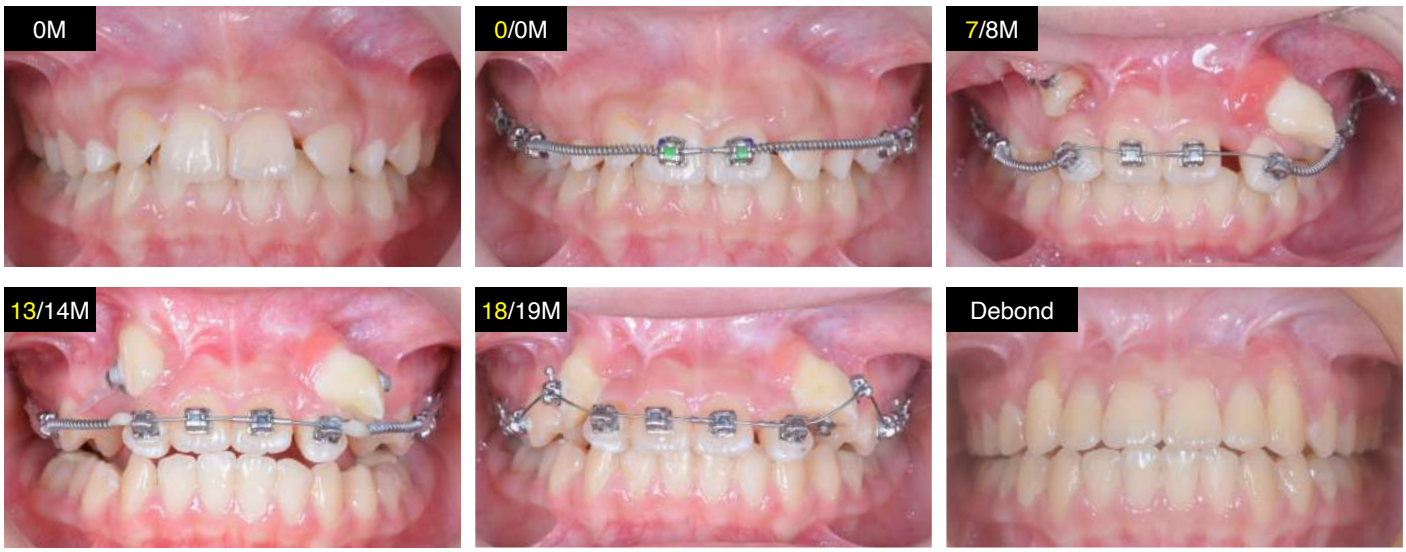

Fig. 10:
Treatment progress - frontal view. Open coil spring were applied in the 1st month to provide and maintain space for transposed canines. In the 19th month, U3s were bonded with bracket in order to bring them down into occlusion.

Fig. 11:
Treatment progress - right buccal view. U2s were bonded with low torque brackets in the 7th months of treatment after the transposed canine had passed the U2s.

Fig. 12:
Treatment progress - left buccal view. U2s were bonded with low torque brackets in the 7th months of treatment after the transposed canine had passed the U2s.

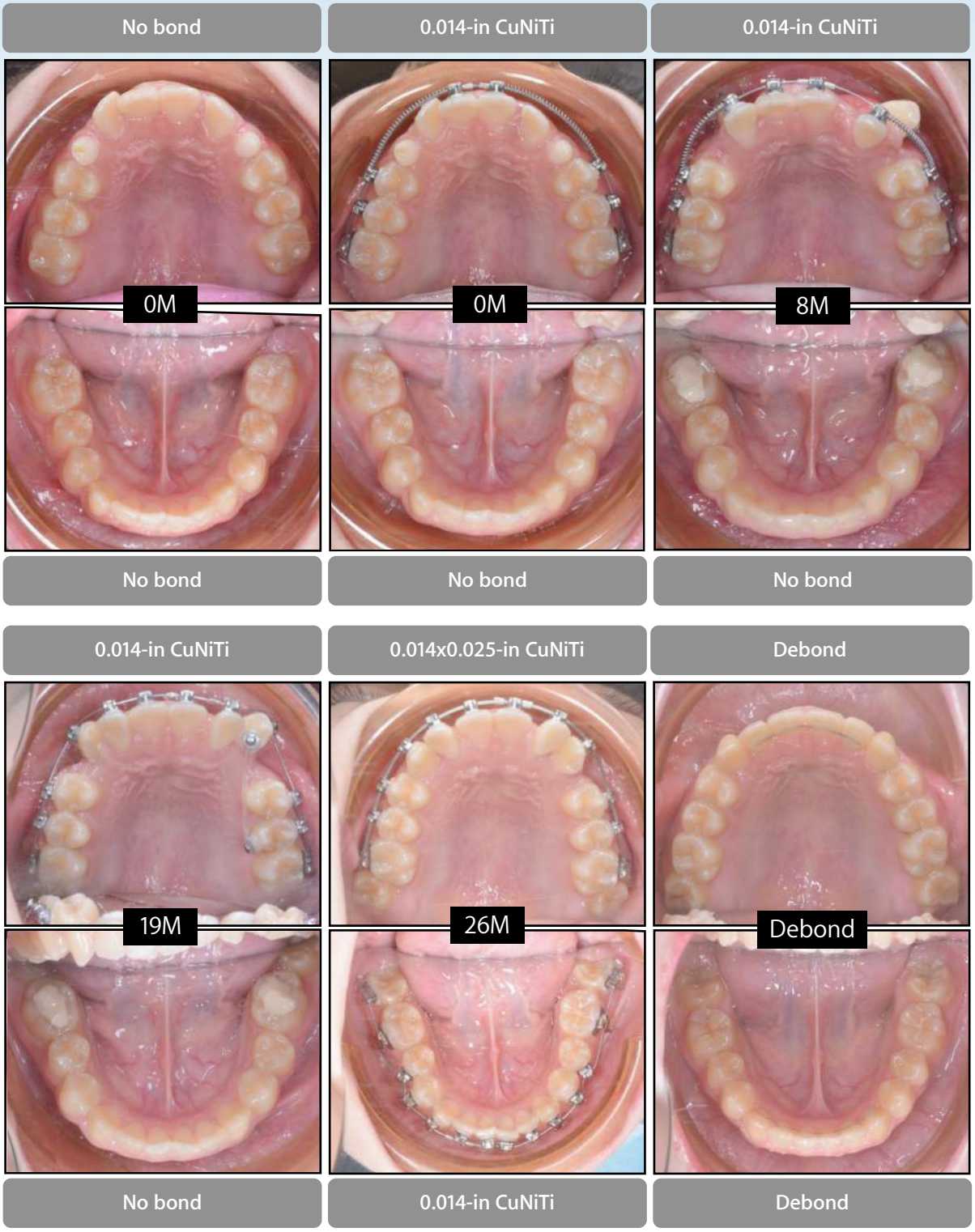

Fig. 13:
Treatment progress from both upper and lower occlusal viewers is specified in months (M), and the archwire sequence is provided from the beginning of the treatment (0M) to debond.

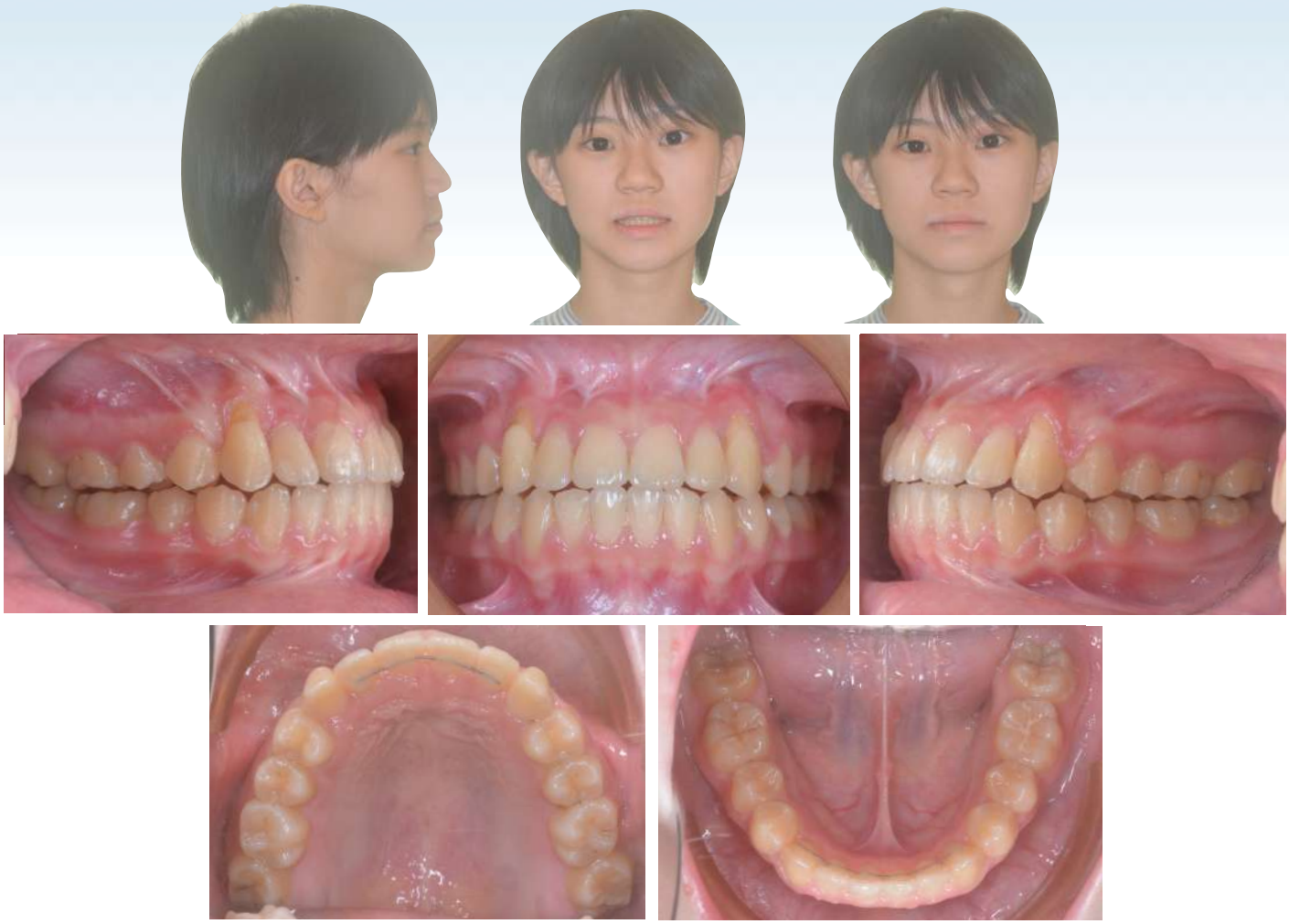

Fig. 14: *Posttreatment facial and intraoral photographs*

The posttreatment panoramic radiographs, cast models, and lateral cephalometric radiographs document the outcome following 40 months of active surgical and orthodontic treatment (Figs. 16-18). Superimposed cephalometric tracings (Fig. 19) show the effect of growth superimposed on treatment. The ABO Cast-Radiograph Evaluation (CRE) score of 4 is based on 4-year follow-up records (Worksheet 2). The major CRE scores were due to the marginal ridge discrepancies between L6 and L7 on both sides.

Retention

An anterior fixed retainer was bonded on the lingual surfaces of both arches (UR2 to UL2 and LR3 to LL3). Removable clear overlay retainers were delivered for both arches, and the patient was instructed to wear them full time for the first 6 months and nights only thereafter.

Fig. 15: 4-year follow-up showed the occlusion was settled naturally through mastication.

Discussion

Delay bonding of the canine and lateral incisors

1. Root resorption

The most common side effect in treatment of impactions is root resorption of the adjacent teeth, and the occurrence rate is 27 up to 49.5%.[14,15] However, in a study where the adjacent teeth were left unbonded as a free body while the canine was moving toward the occlusal plane, the prevalence of root resorption of the lateral incisor dropped to 7.8%.[16] Thus, the UR2 and UL2 were not bonded with brackets for the first 6 months of active traction of the impacted canines (Fig. 8). This allowed UR2 and UL2 to move spontaneously out

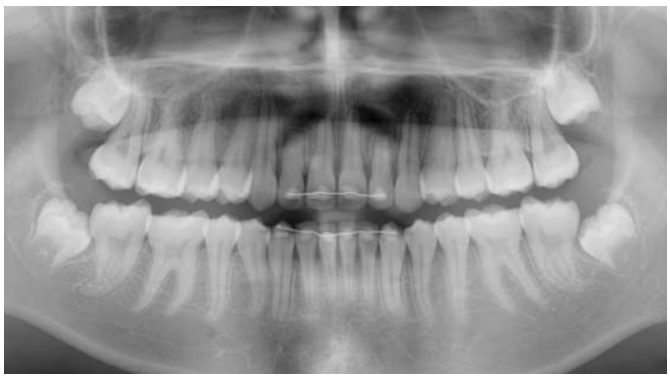

Fig. 16: Posttreatment panoramic radiograph

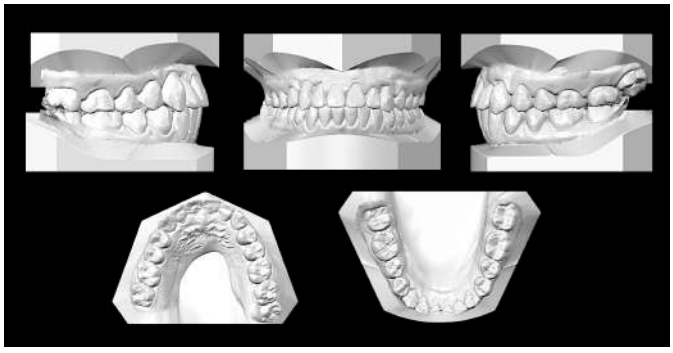

Fig. 17: Posttreatment study models

Fig. 18: Posttreatment cephalometric radiograph

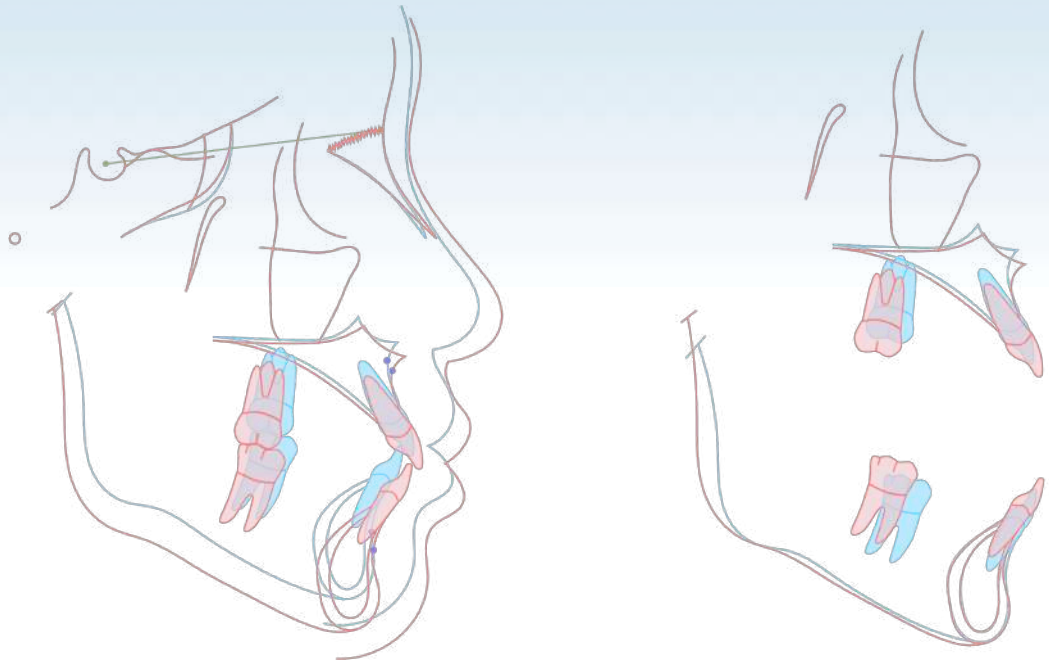

Fig. 19:
Superimpositions of the cephalometric tracings before (blue) and after (red) treatment. Profile and skeletal differences were mainly due to patient's growth.

of the path of movement and thus resulted in decreased risk of root resorption.[1]

2. Torque control

The most challenging part when treating transposed impactions is torque control of the transposed impaction and the adjacent tooth to prevent root damage possible. At the 6th month of treatment, the panoramic radiograph indicated both U3s were tipped labially and retracted, but their roots still overlapped the roots of the adjacent lateral incisors (Fig. 8).

Low-torque brackets were bonded on the UR2 and UL2 in the 7th month to control the flaring effect during leveling. Note that the brackets were bonded with 15° overcorrection, in which the axis

Fig. 20:
The brackets were bonded with 15° overcorrection to create mesial movement to the root apex of U2; the open coil spring was inserted to create a mesial tipping force to the crown of the U2, resulting in the bodily movement of the U2. Mvt: movement.

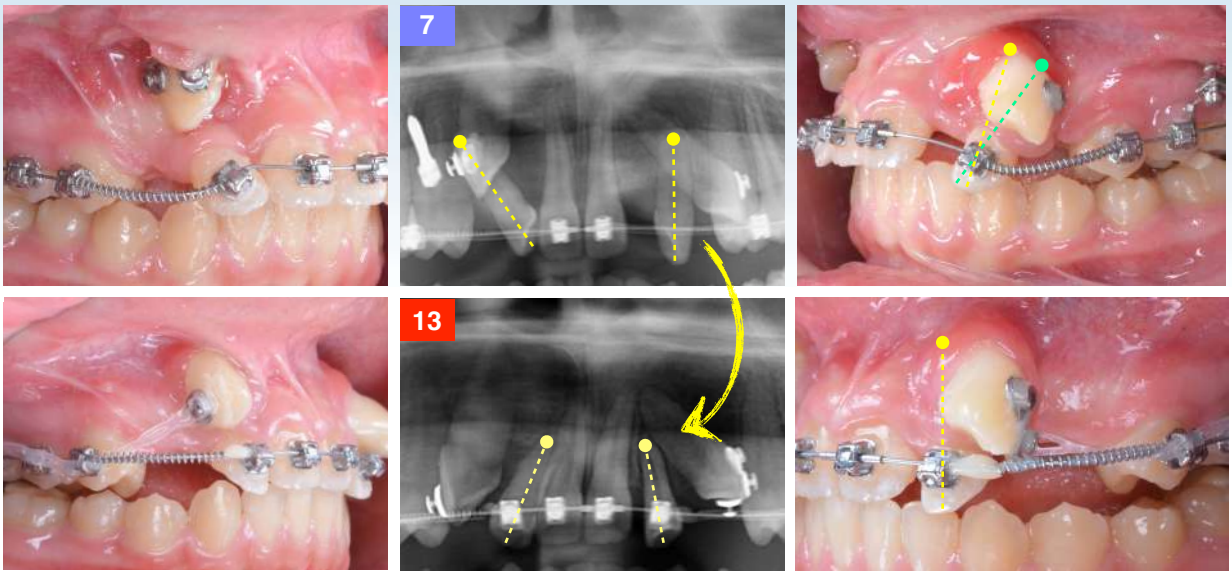

Fig. 21:
Note the mesial root movement effect of U2s with 15˚ overcorrection of bracket position by comparing the panoramic from 7 months to 13 months.

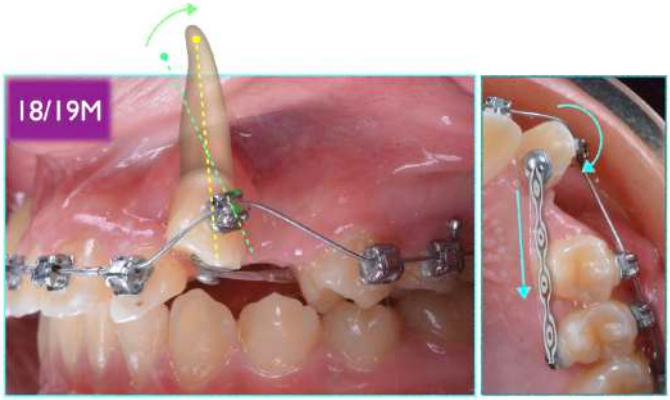

Fig. 22:
UL3 bracket was bonded with a 15° overcorrection in the 18th months, the axis of the bracket was tilted mesially relative to the axis of the canine, to create a distal movement of the transposed UL3 root apex. The buttons were bonded on the lingual surfaces of the UL3 and UL5, then PCs were attached from UL3 to UL5 to create a distal pulling force to the crown of UL3.

of the bracket was tilted distally relative to the axis of the lateral incisors, to create a mesial movement of the lateral incisor root apices. Open coil springs were inserted between the U2 and U4 on both sides to create a mesial tipping force to the crowns of the U2s, resulting in bodily movement of the U2s to correct the transposition of the U2s and U3s (Fig. 20). The effect of the mesial crown tipping and mesial root movement of UR2 and UL2 can be observed in the panoramic radiograph from 7th to 18th months (Fig. 21).

Low-torque brackets were bonded on the UR3 and UL3 in the 18th month. The UL3 bracket was bonded with 15° overcorrection, the axis of the bracket was tilted mesially relative to the axis of the canine, to create a distal movement of the transposed UL3 root apex. Buttons were bonded on the lingual surfaces of the UL3 and UL5, and a

PC was attached from UL3 to UL5 to retract the crown of UL3 (Fig. 22). In the finishing stage, an anterior root torquing spring was inserted for further crown retraction; however the outcome was not satisfying. As an afterthought, individual torque springs should have been placed on UR3 and UL3 to increase lingual root torque and gain buccal bone height to prevent gingival recession.

Surgical design

Ascertaining the precise localization of an impacted tooth is critical prior to designing the surgical access. With the help of Cone Beam Computed Tomography (CBCT), the 3-dimensional (3D) relationship of the impacted teeth is accurately determined. CBCT images can help clinicians to (a) decide whether to perform with buccal or palatal/lingual access; (b) assess potential damage to the roots of the adjacent teeth; (c) obtain a clear view of the amount of bone surrounding the impacted teeth; and (d) design the direction of the orthodontic forces.

A. Flap design

With thorough CBCT analysis, the surgical approach selected was the VISTA technique devised by Zadeh[18] and modified by Chang.[8] The modified VISTA is a minimally invasive surgery that only requires vertical parallel incisions without reflecting a large flap which can traumatize the surgical area and could further lead to unfavorable soft tissue healing.

The combined application of the modified VISTA technique with IZC OBS anchorage and 3D lever arm mechanics will be discussed in the next section - Mechanics: Force system design.

The following modified VISTA surgical steps were performed:

1. Impacted canines were precisely located with the help of CBCT (Fig. 5). The initial vertical incision was made with a no. 15 surgical scalpel to expose the crowns of the impacted canines.

2. A mucogingival flap was reflected with a surgical curette and periosteal elevator to detach the periosteum.

3. The surrounding bone around the impacted UR3 crown was removed with a #5 carbide round bur down to the cementoenamel junction (CEJ). A hand instrument removed the bone near the CEJ to avoid cervical damage to the tooth which can lead to external root resorption.[19] The guide was a sharp recoil when the explorer engaged the enamel compared to adjacent bone.

4. The surface of the impacted canine crown was etched, and a button was bonded on the labial surface of the exposed enamel.

5. A surgical explorer was used to make a dent in the soft tissue over the area of infra-zygomatic crest bone where the mini-screw was planned to be inserted.

6. An OBS (2x14-mm, OrthoBoneScrew®, iNewton, Dental, Inc., Hsinchu City, Taiwan)

was inserted in both the left and right IZC, and 3D lever arms (0.019x0.025" SS) was inserted into the rectangular hole as the anchorage device.

7. A second vertical incision was made on the vestibular side of the primary canine for the power chain to exit.

8. Bone was removed in the proposed path of canine traction which facilitated tooth eruption and up-righting without bone obstruction. Note that the bone in the tunnel was removed after bonding the button because excessive bleeding after bone removal complicates bonding.

9. The 3D lever arm was then activated by connecting the U-shaped end to the button attached on the crown of the impacted tooth using a power chain (Fig. 6).

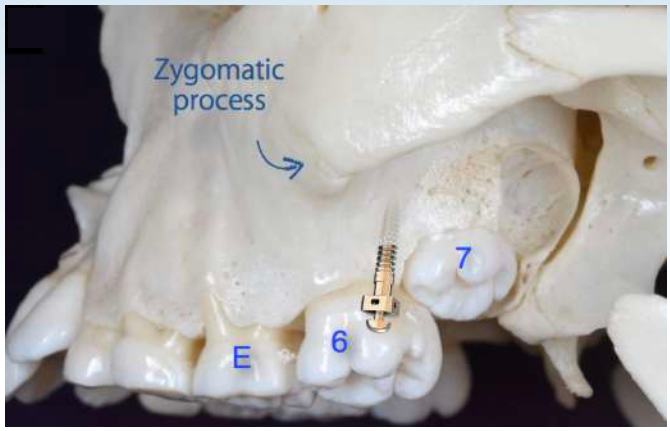

Fig. 23:
The bone screw is positioned around the mucogingival junction (MGJ) of the infrazygomatic crest (IZC) bone that is buccal to the root of first and second maxillary molars

10. The vertical incisions were sutured to ensure minimal damage to the mucosa.

11. Progress was monitored monthly with panoramic radiographs until the impactions erupted (Fig. 8).

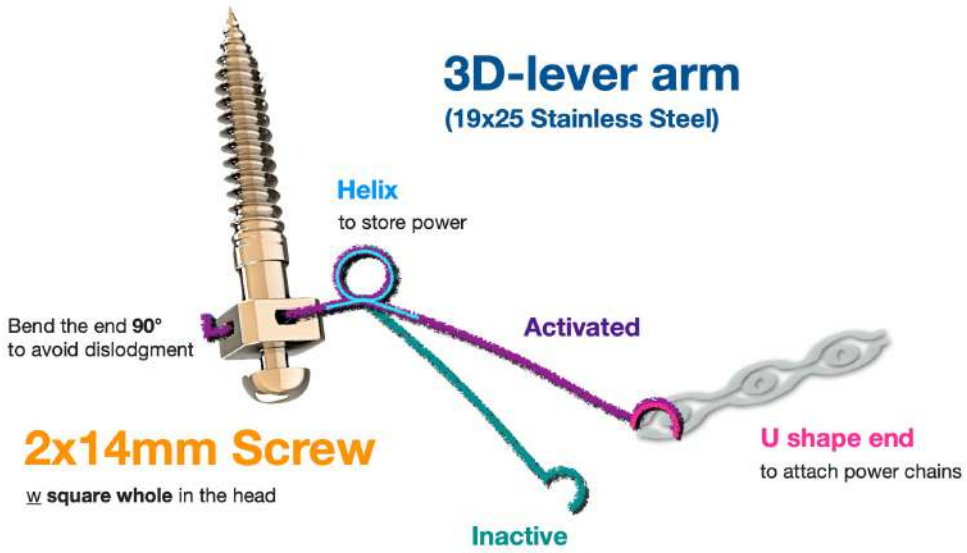

Fig. 24:
A 3D lever arm formed from a 0.019x0.25-in rectangular SS wire segment that has a helix in the body (to store power) and u shape in the end (to attach power chains).

B. Mechanics: Force system design

There are two keys to the force system design: stable anchorage and properly designed mechanics.

1. Stable anchorage: IZC screw

Stable anchorage is essential for the traction of the impacted tooth. Using teeth and archwires as anchorage may distort the occlusion and the arch. The use of mini-screws provides ~~an~~ independent anchorage that does not affect any other teeth or the occlusion. Moreover, since the mini-screw is installed within bone, it provides a stronger and more stable anchorage to move the impaction. The location to insert the mini-screw is around the mucogingival junction (MGJ) covering IZC bone, which is located between the first and second molars (Fig. 23). The mini-screws were inserted with a progressive rotation to achieve an upright position outside the root of U6s and U7s.

2. Properly designed mechanics: 3D lever arm

The 3D lever arm is made with a 0.019x0.025" SS archwire segment with a helix in the body for an increased range of action and a U shape at the end to easily attach PCs using a bird beak plier (Fig. 24). After inserting the 3D lever arm through the dedicated rectangular hole in the mini-screw head, it is then activated by connecting a PC from the end of the lever arm U shape to the button attached on the crown of the impacted tooth (Fig. 6).

The force system of the 3D lever arm provides customized 3D traction: backward, outward, and downward, which is essential for treating transposed impactions with adjacent root impingement. The direction of the force needed for starting UR3 traction is mainly a backward force. Buccal force should be avoided to keep the UR3 away from the UR1 root. The direction of force is adjusted with a three-jaw plier to create a more backward force (Fig. 25). After 3 months of active traction, the UR3 moved away from the UR1 root, and then an outward force was applied by using a three-jaw plier to adjust the force direction. On the other side, the force needed for the UL3 was

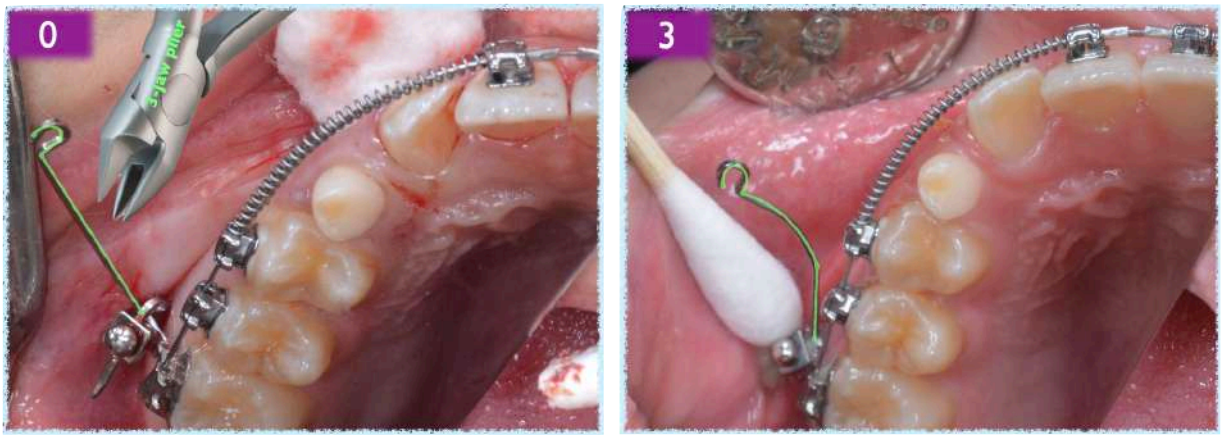

Fig. 25: *The direction and intensity of the force of the 3D lever arm was adjusted with three jaw pliers..*

backward, buccal, and slight downward. The outward force prevented direct impingement of the canine crown movement against the UL2 root, which further reduced the chance of UL2 root resorption.

Gingival recession

Biological limits are of concern when treating transpositioned teeth in order to preserve buccal cortex bone and to prevent gingival recession.[20] There are two main reasons leading to gingival recession after moving transposed teeth back into their normal position: 1. fast traction speed and 2. insufficient buccolingual alveolar bone width. In this case, gingival recession was present on both UR3 and UL3. Since the alveolar bone was maintained by Ucs whose roots were thin, the bone width was not thick enough to support UR3 and UL3 to move into the desired position. Gingival recession is frequently observed on transposed teeth since bone resorption potential exists near periodontal ligaments and dental follicles.

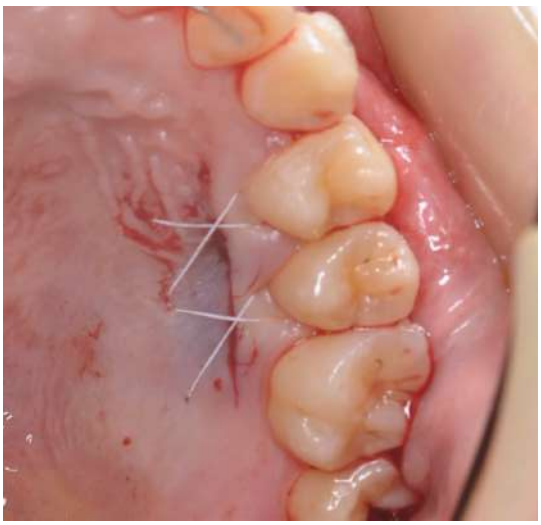

Fig. 26:
The incision of the CTG extended from mesial side of U4 to the mesial side of U6 for better bleeding control.

VISTA was performed to reestablish keratinized tissue. The main difference of VISTA from other gingival augmentation techniques is the coronal advancement of the gingival margin.[10] The gingival margin is recommended to be reattached coronally 2-3 mm below the CEJ, which inhibits apical relapse of the gingival margin during the healing process.

Connective tissue graft (CTG) is usually harvested in the palatal vault 2 mm below the gingival margin and 3 mm away from the greater palatine artery from the mesial of U4 to the distal of U7.[21] However, in this case the incision only extended to the mesial of U6 to avoid cutting the greater palatal artery (Fig. 26). Furthermore, anterior esthetic concerns prevented CTG harvesting from the palatal rugae or the tuberocity due to the irregular mucosa elevation and bulky pale color respectively.

The VISTA approach began with a vestibular incision mesial to the recession defect and straight through the periosteum; an elevated subperiosteal tunnel was created (Fig. 27). CTG of 2-3 mm thickness was placed within the tunnel, whose blood supply was from the covering tunnel tissue. 6-0 nylon suture was used to secure the CTG in place. Since there were several factors, such as scar tissue around the recession area, a lack of buccal bone, short vestibule, and thin gingival biotype of the patient, the result was unsatisfactory after the first VISTA surgery (Fig. 28). The patient was informed prior to starting the treatment that a second surgery might be necessary and would be performed 3 months after the first VISTA surgery.

Fig. 27:
Treatment progress of VISTA. Upper left: providing a concave space for the CTG to grow. Upper middle: UR3 subperiosteal tunnel was created with the VISTA elevator. Upper right: UL3 subperiosteal tunnel was created with the VISTA elevator. Lower left: CTG harvested from the palatal vault. Lower middle: Placing the CTG into the subperiosteal tunnel of UL3. Lower left: 6-0 nylon suture was used to secure the CTG in place.

Fig. 28:
The result of the 1st VISTA surgery was not satisfactory but it provided a thicker mucosal base for the 2nd VISTA.

The first surgery provided a thicker mucosal base, which enabled a more coronal position of the gingival margin to cover the whole CTG during the second surgery, enhancing the prognosis. Since there was no buccal bone on both UR3 and UL3, the formation of long junctional epithelium maintained the graft along the previously exposed root surfaces.[22,23] The result remained stable at 6-month and 1.5-year follow-up after the second VISTA surgery (Fig. 29).

Conclusion

Maxillary canine transposition is a complex and challenging task for orthodontists but can be successfully corrected with careful diagnosis and careful planning of the orthodontic mechanics. The canines were surgically exposesd with VISTA. The mechanics design using a mini-screw as skeletal anchorage combined with a 3D lever arm that provided an independent force system for retracting the impaction. Root resorption and torque loss during the recovery process can be controlled by delaying bonding of adjacent teeth and with bracket torque selection to compensate for the mechanics. If resulting gingival recession

Fig. 29: *The result remained stable at the 6 months and 1.5 year follow-up after the second VISTA surgery.*

occurs, VISTA with CTG is a feasible way to cover the exposed root surfaces.

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Discrepancy Index Worksheet

TOTAL D.I. SCORE **9**

OVREJET 3 mm

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

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

Total = **0**

OVERBITE 3 mm

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

Total = **0**

ANTERIOR OPEN BITE

0 mm. (Edge-to-edge), 1 pt. per tooth
Then 1 pt. per additional full mm. Per tooth

Total = **0**

LATERAL OPEN BITE

2 pts. per mm. Per tooth

Total = **0**

CROWDING (only one arch) 2 mm

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

Total = **1**

OCCLUSION

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

Total = **0**

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = **0**

BUCCAL POSTERIOR X-BITE

2 pts. Per tooth Total = **0**

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

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

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

SN-MP

≥ 38° = 2 pts.

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

≤ 26° = 1 pt.

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

1 to MP ≥ 99° = 1 pt.

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

Total = **0**

OTHER (See Instructions)

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

Identify:

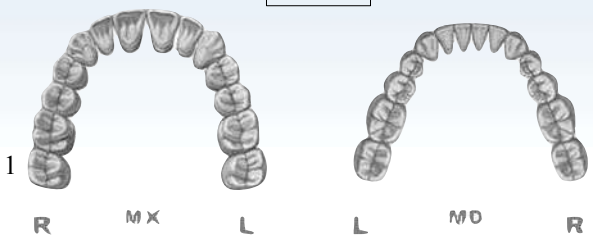
Total = **8**

Cast-Radiograph Evaluation

Total Score: 4

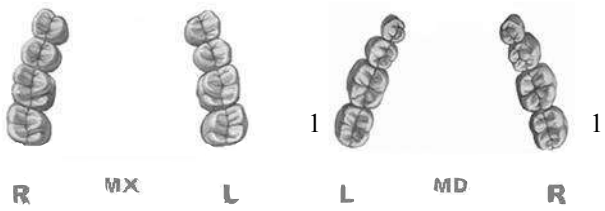
Alignment/Rotations

1



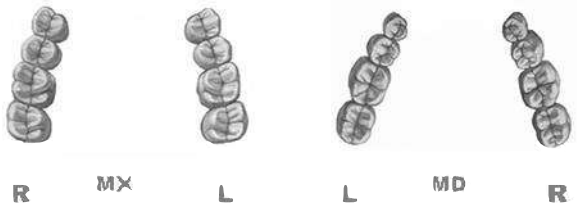
Marginal Ridges

2



Buccolingual Inclination

0

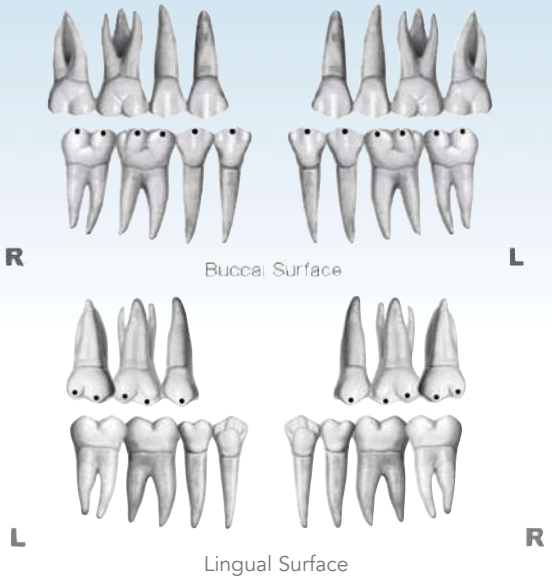


Overjet

0

Occlusal Contacts

0

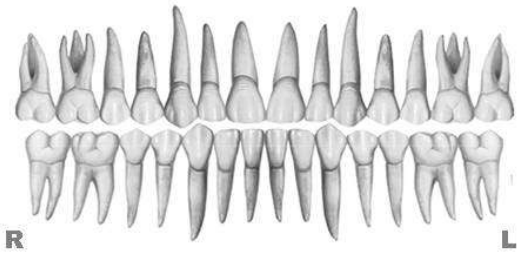


Occlusal Relationships

0

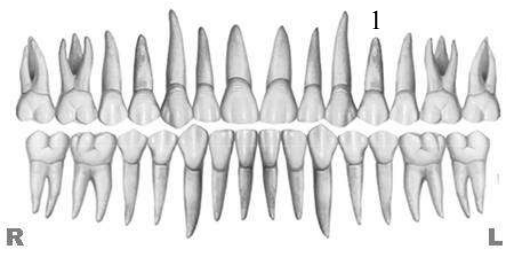
Interproximal Contacts

0



Root Angulation

1



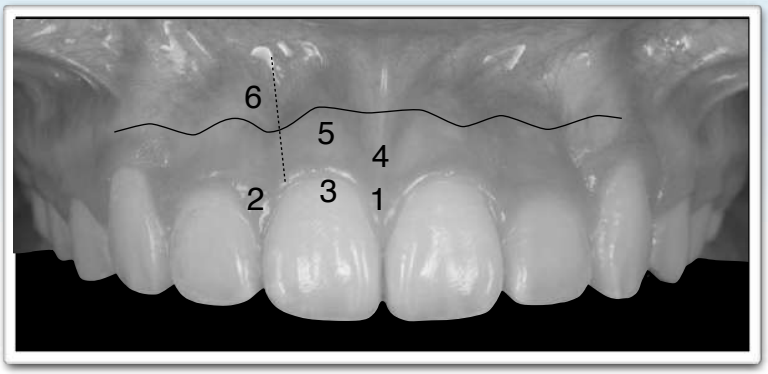
INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

IBOI Pink & White Esthetic Score

Total Score = 4

1. Pink Esthetic Score

Total = 3

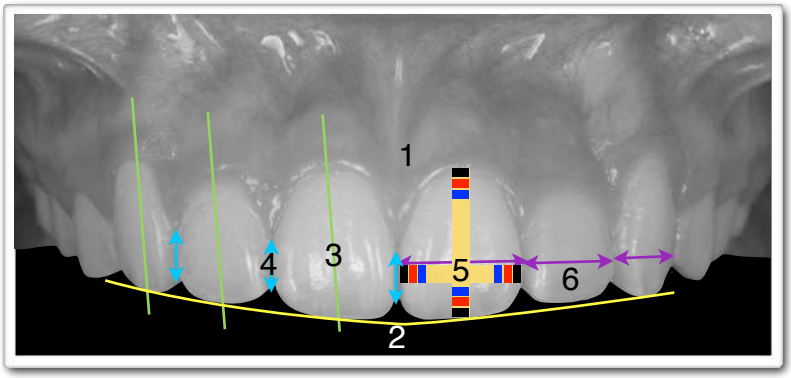


1. M & D Papillae	0	1	2
2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2

1. M & D Papillae	(0)	1	2
2. Keratinized Gingiva	(0)	1	2
3. Curvature of Gingival Margin	(0)	1	2
4. Level of Gingival Margin	0	(1)	2
5. Root Convexity (Torque)	0	(1)	2
6. Scar Formation	0	(1)	2

2. White Esthetic Score (for Micro-esthetic)

Total = 1



1. Midline	0	1	2
2. Incisor Curve	0	1	2
3. Axial Inclination (5°, 8°, 10°)	0	1	2
4. Contact Area (50%, 40%, 30%)	0	1	2
5. Tooth Proportion	0	1	2
6. Tooth to Tooth Proportion	0	1	2

1. Midline	(0)	1	2
2. Incisor Curve	(0)	1	2
3. Axial Inclination (5°, 8°, 10°)	(0)	1	2
4. Contact Area (50%, 40%, 30%)	(0)	1	2
5. Tooth Proportion	0	(1)	2
6. Tooth to Tooth Proportion	(0)	1	2

2025 第四届 张慧男正畸大师班


全新重启的 2025 贝多芬张慧男正畸大师系列课程是由**国际知名讲师张慧男医师亲自规划及授课，课程特色强调由临床病例带动诊断、分析、治疗计划拟定与执行技巧**。

本年度**特别新增两天的课程，加入最新的隐形牙套内容**，让学员可以物超所值地学习最新正畸趋势！透过数位视频反覆观看，课堂助教协助实操，让学员在短时间能快速上手，感染**“热爱正畸学，热爱学正畸”**的热情。

名额有限，一年仅有一次机会完整体验正畸大师课程，错过只能等明年啰！

课程地点：五星级厦门五缘湾凯悦酒店（厦门，湖里区，湖里区日圆二里五号）

课程 1- 6/24 (二)

1. 如何选择第一个病例:建立自信
2. 精准的托槽定位法
3. 高效正畸治疗“四步法”
4. 病例总结和讨论
5. 托槽粘结+BT(合垫)+头影测量

练习：临床摄影技术

课程 2 - 6/25 (三)

1. 简单高效的支抗系统的运用
2. 拔牙与否的诊断分析
3. 病例总结和讨论
4. 实操：微种植支抗系统 + 间隙关闭法 + 牵引钩的使用 + 弹簧的使用

练习：头影测量；完成患者照片记录（模板）

课程 3 - 7/15 (二)

1. 戴蒙系统的诊断与微调
2. 正畸完成后的效果评判
3. 病例总结和讨论
4. 实操：弓丝的弯制和固定保持器的制作

练习：指导患者拍照记录（用自己的时间）；修图技术

课程 4 - 7/16 (三)

1. 完美的结束：病例演示
2. 保持和复发：病例演示
3. 病例总结和讨论
4. 实操：演讲演示

练习：演示病例报告

课程 5 - 9/16 (二)

1. 正畸中生物力学的诊断分析
2. 正畸中软组织和硬组织的诊断分析
3. 青少年与成人正畸的诊断分析
4. 病例总结和讨论

练习：病例报告

课程 6 - 9/17 (三)

1. 对于拥挤病例拔牙与否的诊断分析
2. 如何实现上颌的压入
3. 如何实现下颌的压入
4. 病例总结和讨论

文献探讨：托槽的定位；埋伏尖牙的正畸

课程 7 - 10/14 (二)

1. 缺失牙的正畸分析：前牙缺失 vs. 后牙缺失
2. 反合的正畸分析：前牙反合 vs. 后牙反合
3. 病例总结和讨论

文献探讨：尖牙替代缺失的侧切牙的正畸分析

课程 8 - 10/15 (三)

1. 高角开合与低角深覆合病例的诊断分析
2. 美国正畸协会，DI CRE 分值测量实操
3. 病例总结和讨论

文献探讨：DI & CRE 文献

课程 9 - 11/18 (二)

1. 如何改善露龈笑；矫治器拆除的注意事项
2. 正畸结束时的微调
3. 病例总结和讨论

文献探讨：完美的正畸效果（良好的咬合；前牙的美学效果）

课程 10 - 11/19 (三)

1. 联合种植支抗的正畸治疗
2. 多学科联合治疗成人复杂病例
3. 病例总结和讨论

文献探讨：IDT

课程 11 - 12/23 (二)

1. 隐形牙套正畸
2. 隐形牙套及其挑战

文献探讨：隐形正畸前置治疗

课程 12 - 12/24 (三)

1. 隐形牙套结合支抗钉治疗
2. 隐形牙套力学

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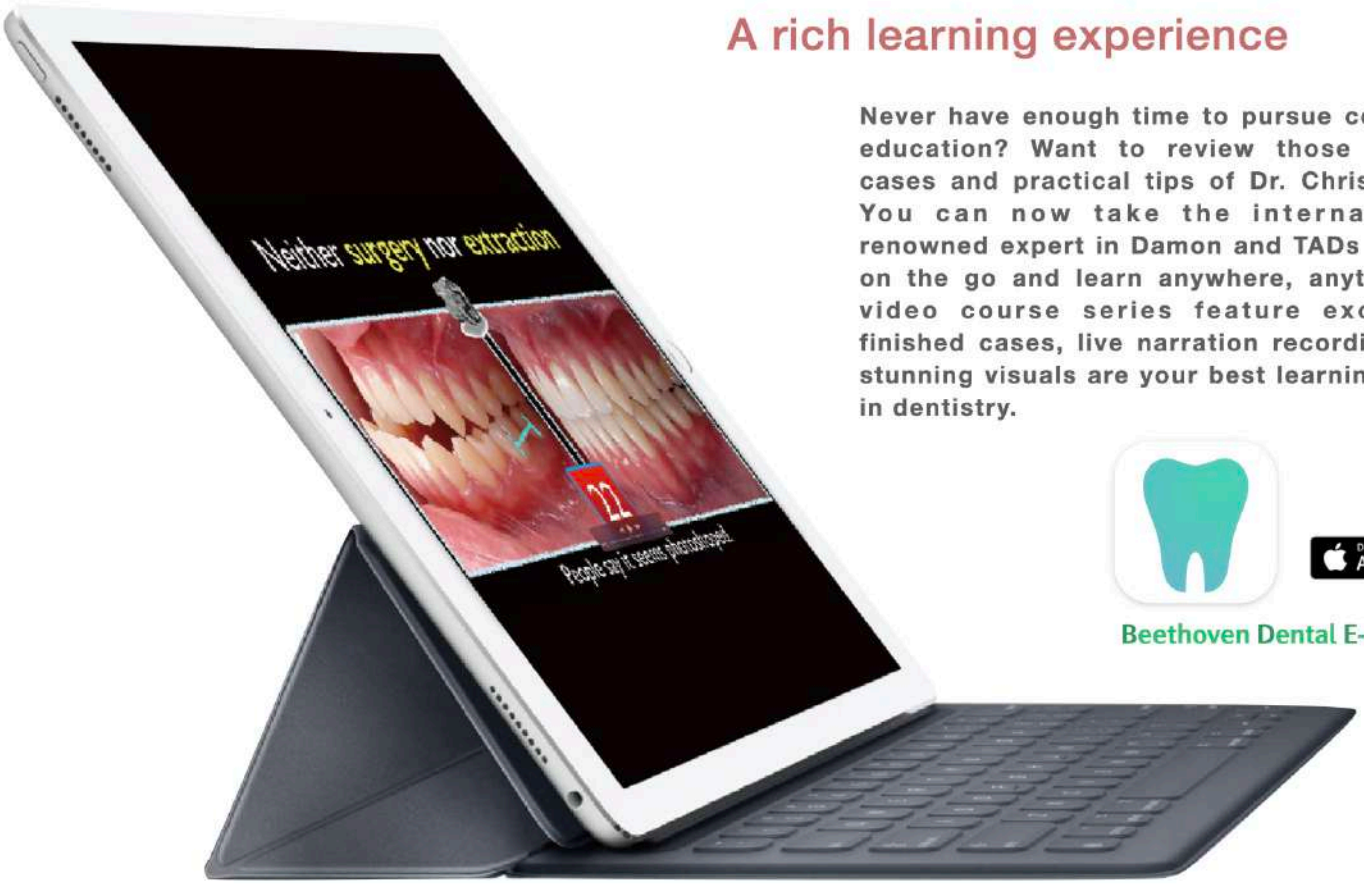

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