Implantology Exploration
專業創新・昇植我心

植牙大探索

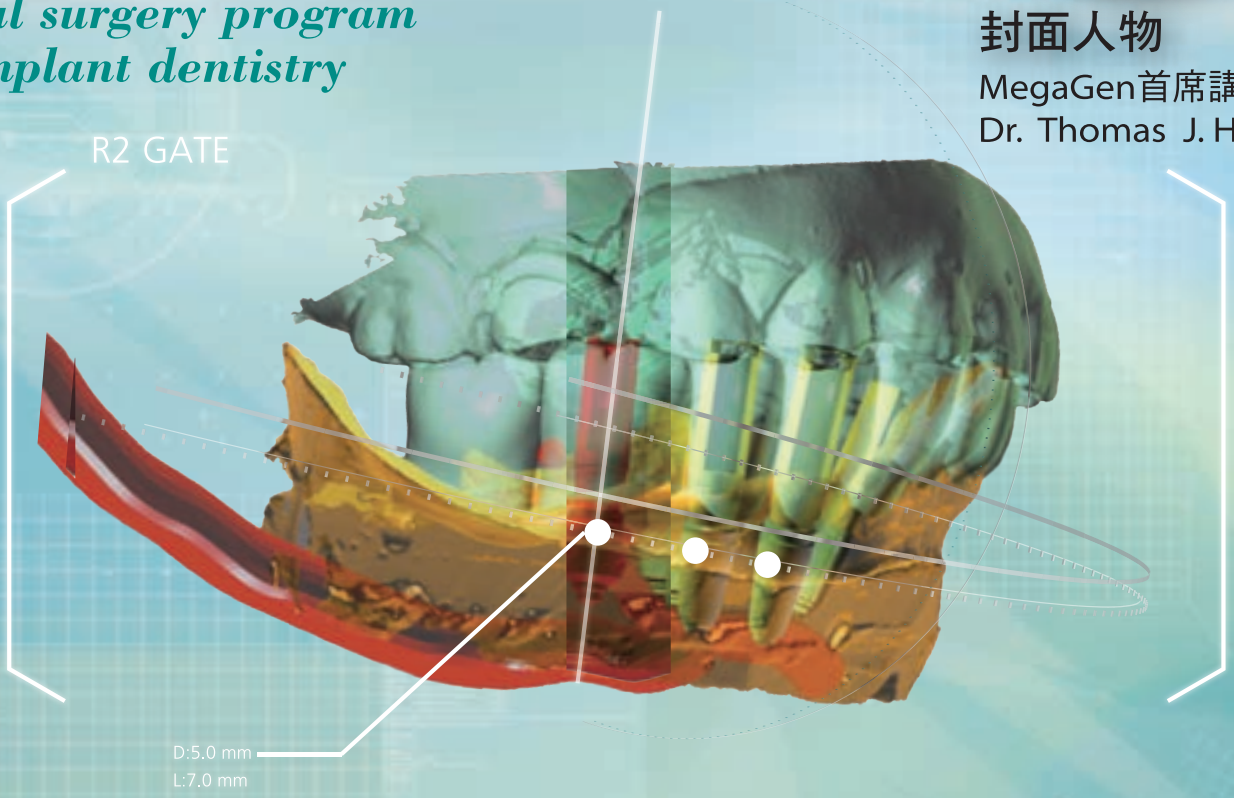
NO.6 夏季號 2014.07.10

■ 本期主題

R2 GATE

The cutting-edge digital diagnosis & virtual surgery program for implant dentistry

封面人物
MegaGen首席講師
Dr. Thomas J. Han



■ 焦點話題
Open your Digital-eye!

■ 植牙好幫手
MILA kit™ [REV.01]

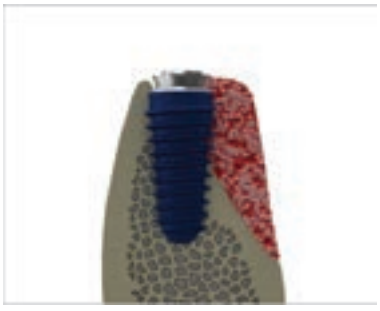
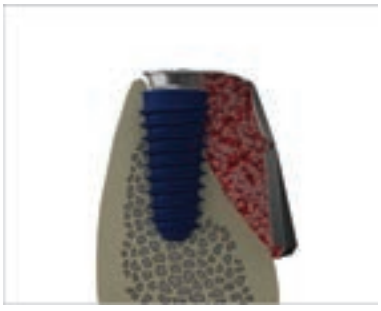
■ 大師論壇
Crestal Sinus Lift:
A Minimally Invasive and Systematic Approach to Sinus Grafting

i-Gen™

GBR Membrane for Ideal Regeneration

尺寸齊全 事先成型

使用方便 效果絕佳


昇基事業股份有限公司
SUNRISER MEDICAL CO., LTD www.sunriser.com.tw

台北市忠孝東路五段815號12樓 TEL:02-27881335 FAX:02-27882885
台中市西屯區工業區一路12號2樓 TEL:04-23551359 FAX:02-27882885
高雄市前鎮區中山二路2號19樓之5 TEL:07- 9511335 FAX:07- 9501335

植牙大探索

第6期2014夏季號 7月10日出刊
2013年1月1日創刊

發行人：Kwang Bum Park

發行所：昇基事業股份有限公司
台北市南港區忠孝東路5段815號12樓 網站：www.sunriser.com.tw
台灣美佳境股份有限公司
新北市五股區五權六路41號 網站：www.tplusimplant.com.tw

總代理：鼎研生技股份有限公司
桃園縣中壢市環北路398號14樓之8
台北辦事處(02)7722-6987

執行製作：宏碩文化事業股份有限公司 電話(02)5599-99999 傳真(02)5590-5979

責任編輯：Sarah Hsia

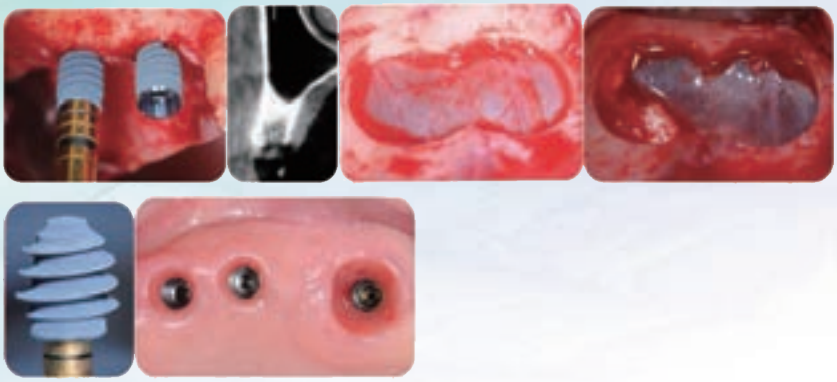
編輯：Mars Wang , Lorie Yang , Jimmy Chang , Regina Liu

威謝投稿：林伯璣醫師、郭茂寅醫師
Especially thanks Dr. Thomas J. Han for accepting our interview as the cover story

中華郵政台北雜字第2015號登記證登記為雜誌交寄

目錄contents

MILA kit / AnyRidge



Name : Dr. Achraf Souayah
Nation : Tunisia

Clinical Case

Before Surgery

A 35-year-old female patient visited with a chief complaint of enhancing her smile display and to restore broken teeth # 14 and 15.

The patient's medical history was not significant. At clinical examination, the patient presented a high lip line, with ugly composite fillings on teeth #11 and 21.

Teeth #14 and #15 are suffering from deep cavities, with a horizontal corono-radicular fracture of tooth# 14.

At the first radiograph examination teeth #14 and #15 showed relatively short roots, with an apex located almost inside the sinus cavity.

Two porcelain laminate veneers were planned to be bonded in the central incisors.

The extraction of tooth #14 and 15 was decided, with simultaneous sinus floor elevation and immediate implant placement.

Fig. 1-2. Initial patient's smile: high lip line (frontal and lateral views)

Fig. 3-4. Pre-operative photographs. Ugly composite restorations on teeth #11 and #21 ; Hopeless teeth #14 and #15

Radiological investigations

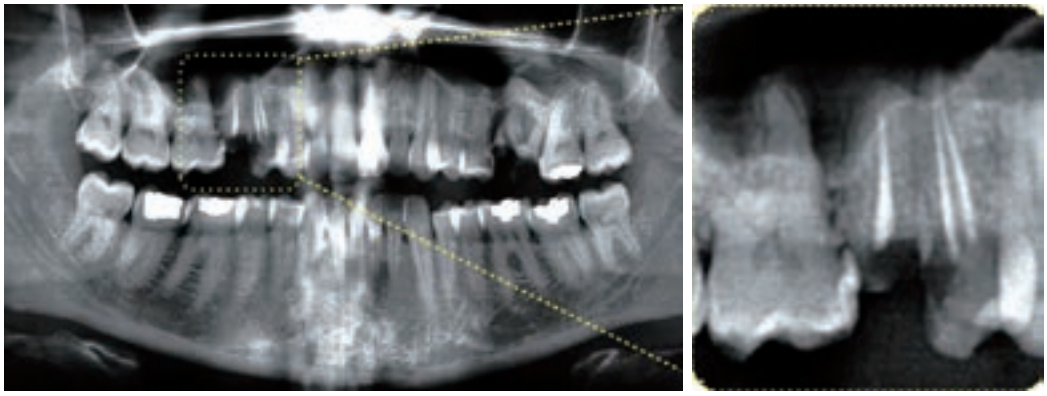


Fig. 5. Pre-operative Panoramic Radiograph showing intra-sinus roots

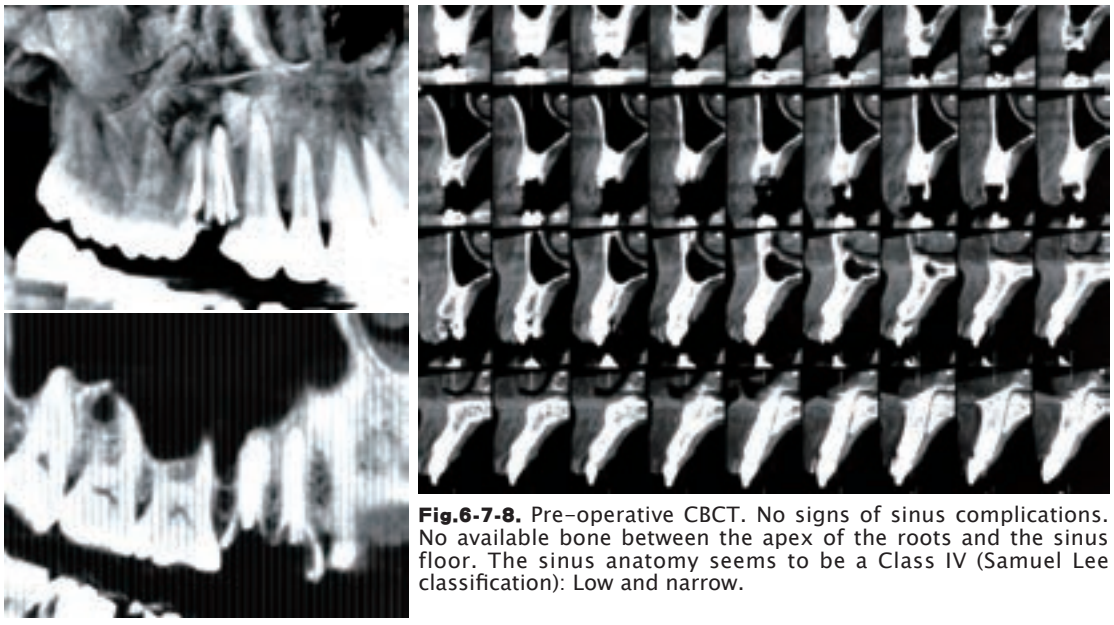
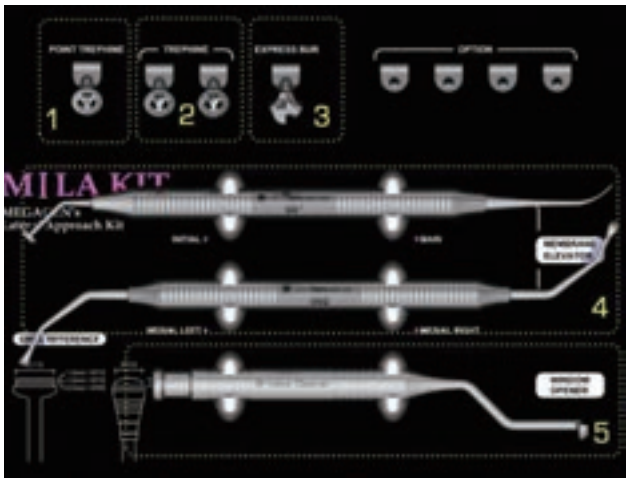


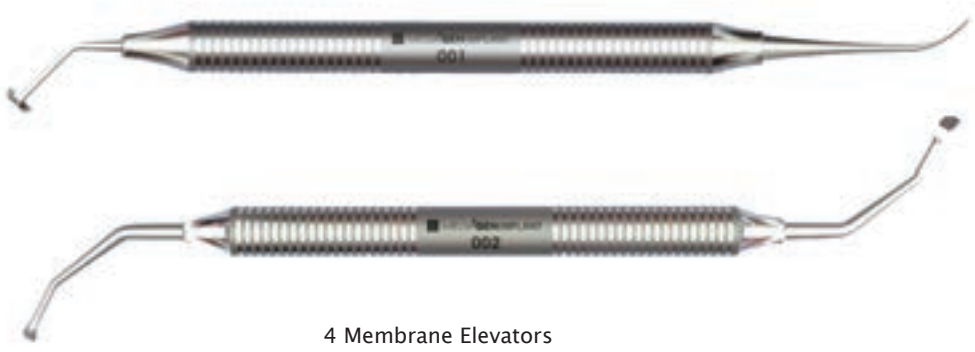
Fig.6-7-8. Pre-operative CBCT. No signs of sinus complications. No available bone between the apex of the roots and the sinus floor. The sinus anatomy seems to be a Class IV (Samuel Lee classification): Low and narrow.



MILA Kit

1 Point Trephine Bur　　2 Lateral Trephine Bur

3 Express Bur



4 Membrane Elevators

5 Window Opener

Lateral window Sinus Lift

After local anesthesia using Articaïne-(1/100.000 Epinephrine) in the surgical site, an intra-sulcular incision was performed with a mesial vertical releasing incision. A full thickness flap is reflected to expose the alveolar ridge.

A thin periotome was used to cut the crestal periodontal fibers. Once in the periodontal ligament, a Luxator is worked down the length of the root with a side-to-side rocking motion and steady axial pressure. This motion first severs the periodontal fibers, and then as the blade is introduced further, the socket is dilated to allow an easier path of removal. Finally, as the periodontal ligament is severed and the socket dilated, bleeding and air ingress overcome the vacuum that resists tooth removal. The atraumatic root extraction avoid damaging the buccal plate, and further bone managing procedures.

The MegaGen Impalnt lateral Approach Kit (MILAkit) was used for perform the sinus lifting procedure.

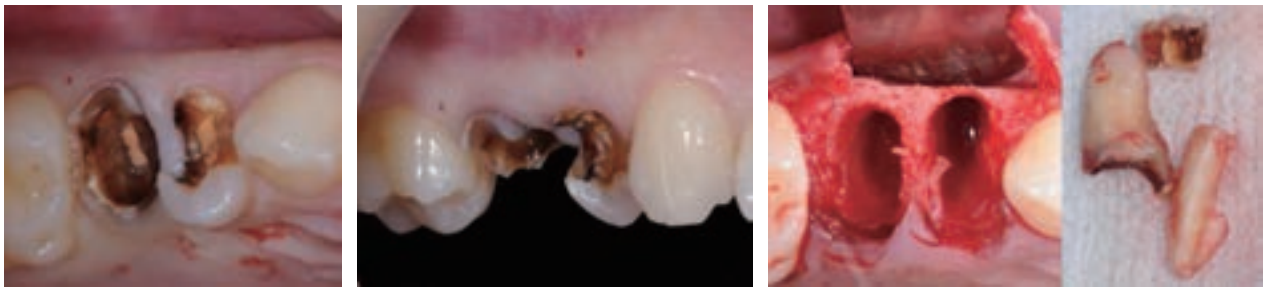


Fig. 9-10-11. Pre-operative situation I Root extraction

Initial Trephine Bur

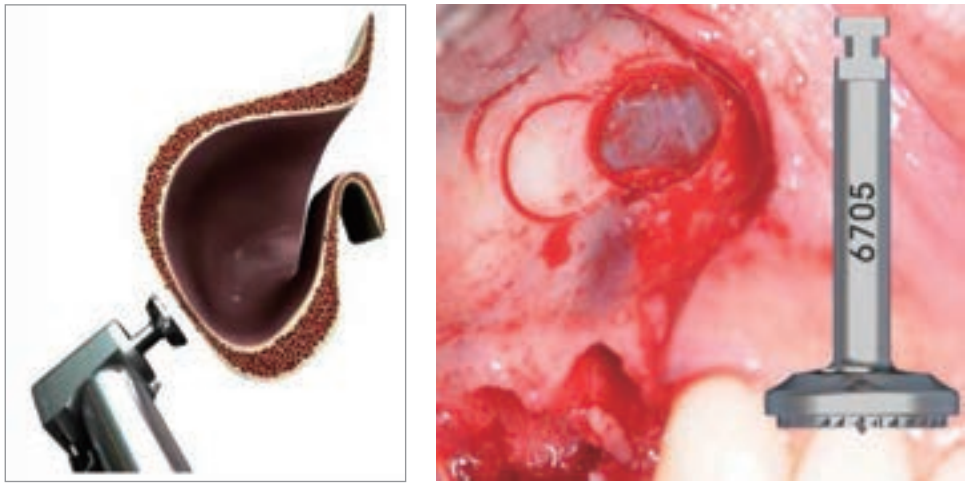


Fig. 12-13. The Point Trephine Bur is used for initial drilling.
It is important to Identify accurately the position of the first drilling. The special design of the point Trephine bur allows to locate the two first round shaped drills just in the apical part of extracted roots.

Trephine with 1 mm external stopper

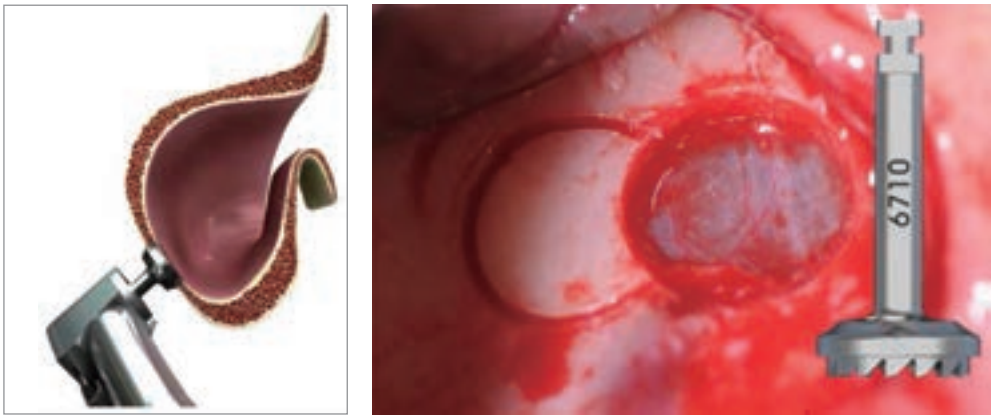


Fig. 14-15. A Lateral Trephine Bur is selected depending on the thickness of the remaining bone calculated in the CBCT scan. Once the selected drill is mounted in the contra-angle, just drill again over the hole made by the Point Trephine bur. The integrated stop into the Trephine Bur doesn't allow to go deeper than the calculated thickness of the sinus wall, and avoid to harm the Schneiderian membrane, especially thin in this case.

Lateral window Sinus Lift

Fig. 16. The Use of the Window Opener help to fracture and remove the window wall.

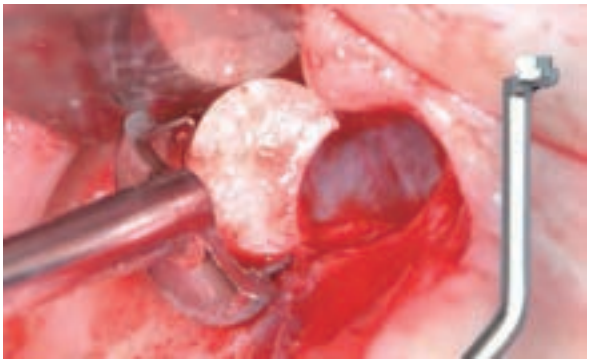


Fig. 17. "Window Opener" used to detach window wall.

Fig. 18. The Window wall is removed.

Fig. 19. The remaining window wall is Completely removed with the Express Bur.

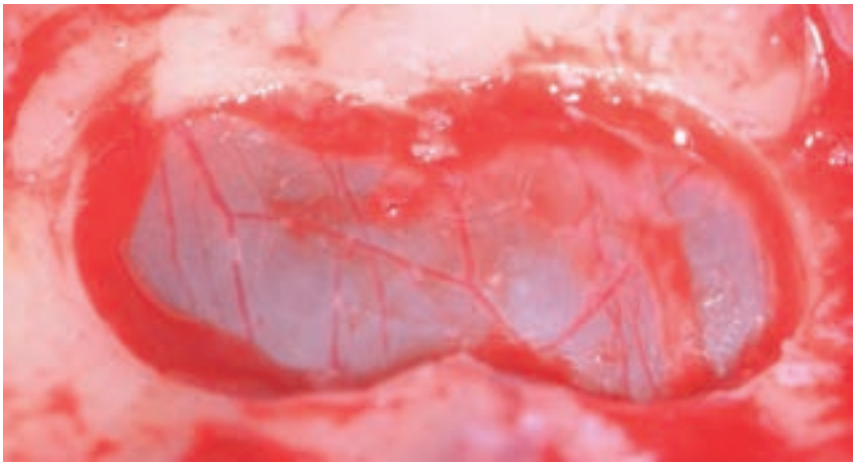


Fig. 20. 0nce the two window walls are removed completely, the schneiderian membrance seems to be not damaged or perforated. The very thin sinus membrane allows even to see clearly the vascularization and anastomosis.

Fig. 21. The Sinus Membrane Elevator 001 is introduced through the hole to perform the first membrane lift.

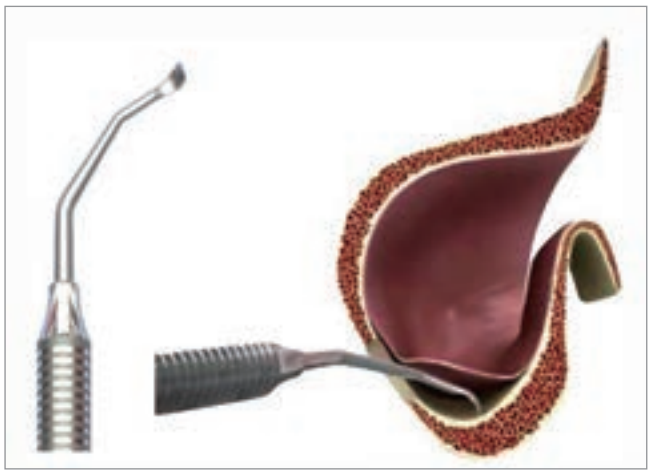


Fig. 22. The Sinus Membrane Elevator 002 is then used to lift further the membrane. A special care must be given to not perforate the membrane by keeping a boney contact with the elevator. The elevation of the membrane is performed untill the antero-lateral wall of the sinus cavity.

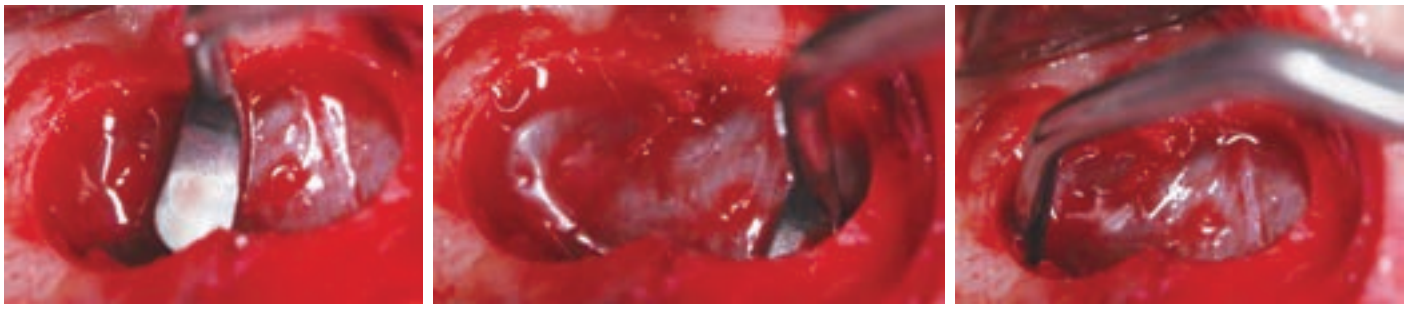


Fig. 23-24-25. Details of membrane elevation using elevator 002: Lift membrane.

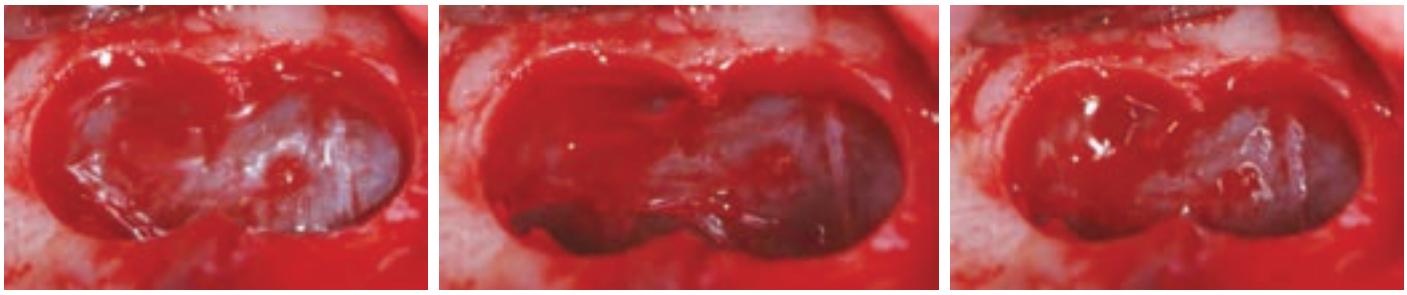


Fig. 26-27-28. The integrity of the membrane is checked under the respiratory movements.

Bone Grafting/ Implant Placement

Once the sinus membrane is perfectly elevated, a flat sinus curette is used to protect it while preparing the implant sites. A jumping distance is left between the implant wall and the inner side of the buccal plate.

The sinus cavity is then filled with a bovine bone substitute (Cerabone, Botiss Biomaterial) mixed with autogenous bone chips collected from the drills while preparing the implant sites. Skipping the last drill in the sequence of implant drills is recommended to achieve a better bone compaction and improve the initial stabilization of implant.

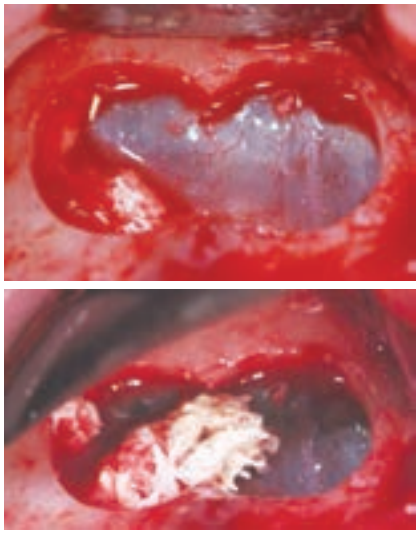


Fig. 29-30. Sinus cavity filled with bovine bone material mixed with autogenous bone chip

After that, two Any Ridge implants were placed (3,5mm, L=13 mm) with a torque higher than 40 N/cm. The under-sized implant bed and the special design of this implant with self taping and cutting edges allow to get a high primary stability even in such situations. Two healing abutments were connected to the fixtures, and the gap filled with bovine bone (Bio -Oss, Geistlich Pharma). The sinus cavity is revisited again and the spaces grafted with the same bone granules. The previously detached window wall is tapped into the position to prevent soft tissue migration into the sinus bone grafting.

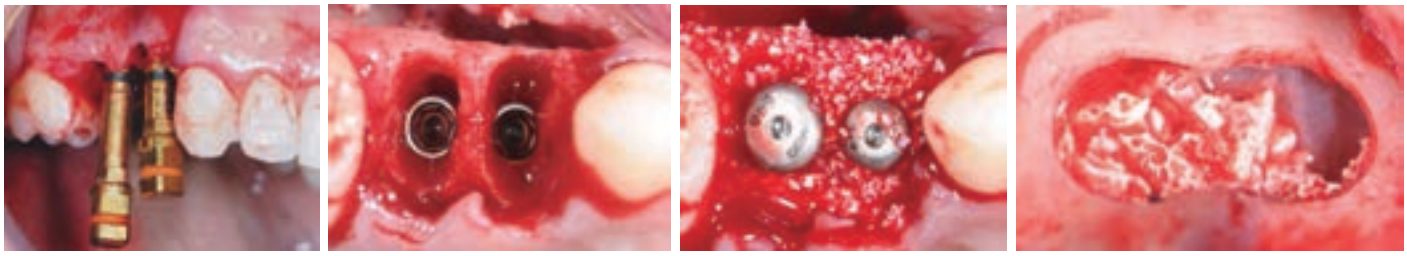


Fig. 31-32-33-34. Implant placement | Jumping distance | Healing abutment connection & gap grafting | Lateral window vacuity before filling it again

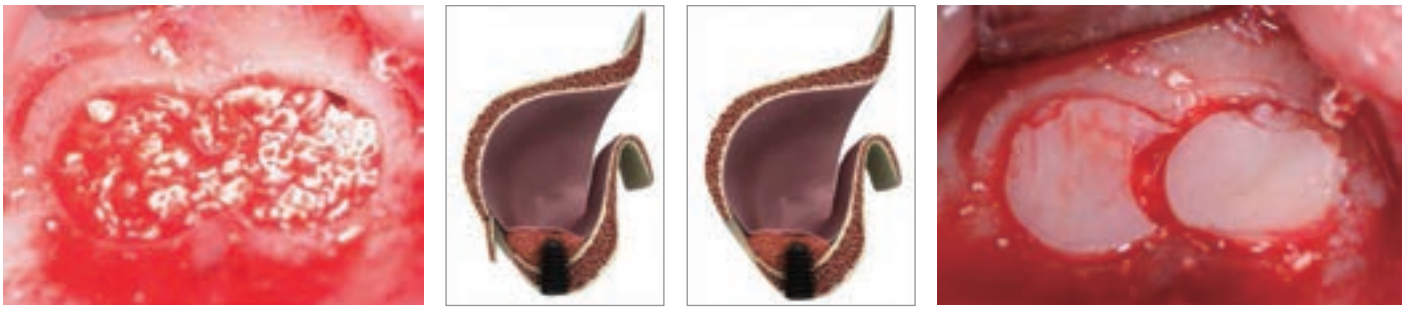


Fig. 35-36-37-38. Closure of the window wall : Previously detached window wall is tapped into the position to prevent soft tissue migration into the sinus bone grafting

Soft Tissue Closure I Sutures

A special care is given to soft tissue management and wound closure. A partial dissection allow to replace the flap in the right position. Horizontal mattress sutures secure the flap closure around the healing abutments, and simple seperate sutures were used to close the releasing incision.

Fig. 39-40-41. Flap repositioning and sutures

Fig. 42. Soft Tissue healing after 1 month

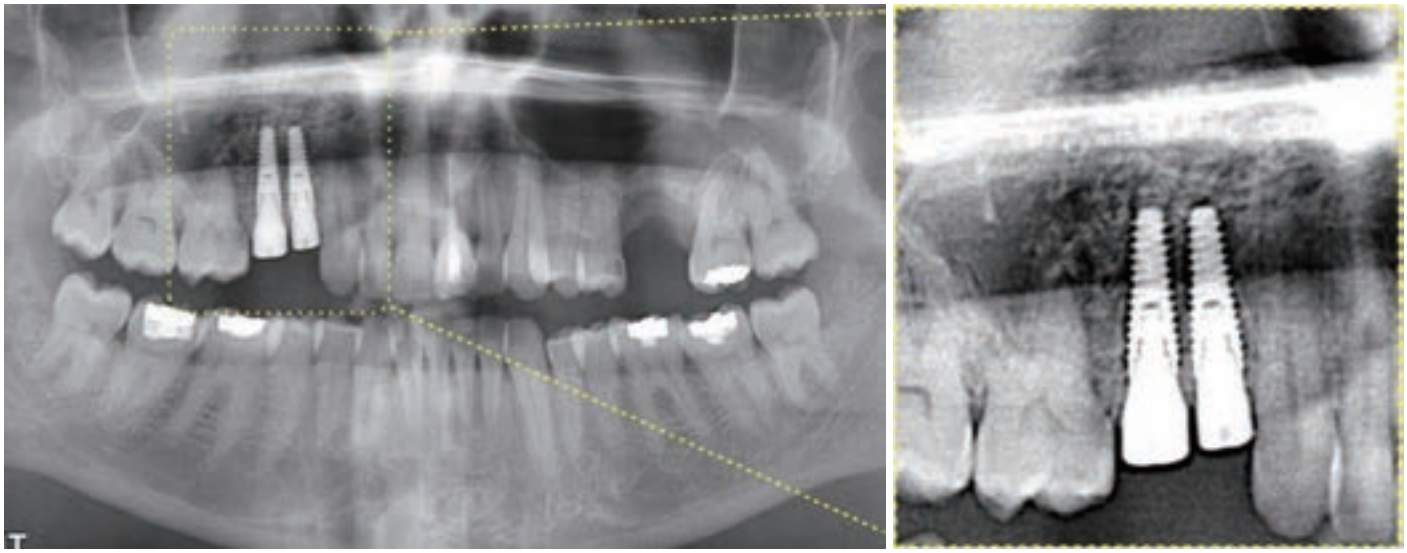


Fig. 43-44. Panoramic and CT scan should be taken after the surgery to verify proper grafting of maxillary sinus without perforation. It is more important to note the horizontal compaction of the bone graft touching the medial and lateral walls, which maximize the blood supply to the graft and determines the longevity of the graft after loading.

2014 昇基公司 MEGAGEN

ONE-DAY IMPLANT 韓國植牙課程

2014 10/31~11/2

中華民國臨床植牙醫學會專科醫師學分：12 學分

行程： Day1：飛韓國釜山, 住大邱 Novotel. City tour (Gyeongbokgung area-Myeong-dong,Time Square)

Day2：Mir Hospital visit, Live Surgery Class.
Eureka R2: R2 GATE(History & Overview) & Clinical Cases .

Day3：韓國釜山回台北

早鳥價 **$65,000**

團費 + 植牙課程 = ~~$ 70,000~~

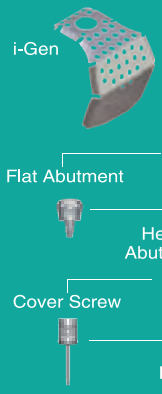
Speaker：
Dr. Kwang Bum Park

MIR Dental Hospital

參加即贈送 2選1

(A) i-Gen 大組 *1

定價 ~~$51,000~~



i-Gen™

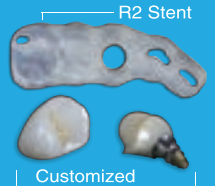
內含:
- i-Gen 12片
- Flat Abutment 12支
- Healing Abutment 6支
- Cover Screw..... 6支
- Driver 1支

(B) ODI套組 *2

總價 ~~$60,000~~

單價 30,000/套

3D ODI ONE DAY IMPLANT



內含:
- R2 Stent 1顆
- AnyRidge Fixture 1支
- Customized Zirconia Abutment.1支
- Customized Zirconia Crown 1支

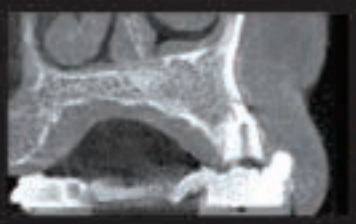
立馬報名專線： (02) 2788-1335 #205 楊小姐 或與您專屬業務聯繫

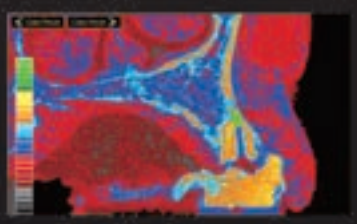
主辦單位： 昇基事業股份有限公司　　協辦單位：中華民國臨床植牙醫學會

Open your Digital-eye!

Digital-eye™

Color-coded analysis of the bone morphology enables you to identify invisible bony structure easily and to predict a optimal drilling sequence for strong initial stability of implant.





Turning your imagination into reality

- **Diagnosis & Treatment plan using R2GATE and result**
- **Understanding and Purpose of Surgical Stent Surgery**
- **Clinical cases using an R2 Stent (1)**
- **Clinical cases using an R2 Stent (2)**

Dr. Jong Cheol Kim

- Graduated at School of Dentistry, Chunnam National University Adjunct professor at School of Dentistry, ChunNam National University.
- Director of MINEC implant training Session.
- Chief researcher of MegaGen Implant Co., Ltd.
- Clinical instructor of KDA. (Korean Dental Association)

1. Diagnosis & Treatment plan using R2GATE and result

Implant surgical procedure using guided static surgery

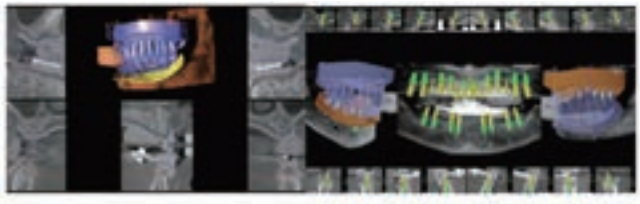
A 68 year old patient presented needing full mouth reconstruction. Unfortunately, he suffered from pneumonia and had to be hospitalized for about 6 months immediately before the implant surgery. There was partial maxillary bone loss as shown in the panorama below taken before surgery. The patient would need GBR procedure to recover lost bone. At a late stage, the patient and his family changed their minds, preferring minimally invasive implant surgery after the long-term hospitalization due to pneumonia. In this situation, flapless surgery would offer the least invasive option if no GBR treatment was to be carried out. In this case, direct surgery would not be possible, and a blind technique would be required. Under such conditions, most doctors would want to simulate the surgery using all available options - CT images, prognosis program and customized guided drills. This is the story of an approach to guided static surgery converging CBCT (a media device) and CAD/CAM technology through this clinical case.

These are the photos and panoramas of the patient's oral cavity after 6 months hospitalization. We need to take alginate or rubber impressions for a full mouth reconstruction using guided surgery. The plaster model is sent to a digital center which produces the stents. 3 different materials based on the plaster model are sent back to us. Using a wax rim, the operator will decide the implantation position of the upper central incisor, and mark the extension line connected to central line of the face. The facial soft tissue can also be controlled and the bite plane of the deployment angle can be decided by editing the wax rim. We can refer the arrangements of the stent from these procedures. The position of the CR and vertical dimension are decided with a Gothic arch attached to the plaster model. We can decide the so called 'verti-centric' with a Gothic arch.

These pictures show the Gothic arch traces that indicate the movements of the mandible and the stable mandibular position. Proper VD (Vertical Distance) has been decided. Bite material will be poured into the oral cavity with the Gothic arch to record the 'verti-centric', then a CBCT image is taken. The pictures to the right are the CBCT photos with the Gothic arch. Preparation is now complete.

CBCT images are sent to the digital center server online, the Gothic tray containing verti-centric movements, the plaster model and the wax rim with facial information will be also be sent by regular mail. Specialists at the digital center will start mounting on an Articulator based on the received materials. These pictures show the model mounting procedure. The maxillary and mandibular plaster models, the inter-maxillary space and the wax rim information can be digitalized using a dental scanner.

These pictures show the diagnostic wax-up made based on scanned materials by Dental CAD saving a lot of time. All the information regarding the diagnostic wax-up can be opened as a file on R2GATE program. The principle of R2GATE developed by Megagen implant Co., Ltd. is layering the DICOM (CBCT) image and the STL file (attained by scan and CAD). By layering the images, we can simulate the implantation based on the prosthetic appliance position seeing the diagnostic waxup, the plaster model image and the bone condition at the same time. This makes mock surgery using the 'Top-Down treatment' idea possible. The operator's surgical concept can be simulated using two-and three-dimensional images. Below pictures show the simulated implantation of 10 maxillary teeth and 8 mandibular teeth. Another advantage of R2GATE is the actualization of the mock surgery results as opposed to other CT viewers which only check the result via a monitor. This simulation result can be extracted as a file that can be used to design with Dental CAD.



These pictures show the full denture drilling guide designed based on the sources from digital CAD. Not only the drilling guide holes, but also the pin holes needed to fix the stent can be designed. In addition the customized abutment and prosthetic appliance can be designed. This means we can recover function and aesthetics immediately by placing the upper prosthetic appliance (if the case of suitable ISQ value) because an upper prosthetic appliance fitting exactly to the implants placed through the customized drill guide can be produced in advance. The CAM method currently attracts more users than CAD. CAM has 2 different ways of manufacturing - milling or 3D printing. This will be expanded in the following pages .

These pictures show the maxillary and mandibular implant drill guides produced by 3D printing. The pictures below show the customized zirconia abutments and temporary crowns produced by milling. As a result, the dentist can receive a drilling guide and a maxillary prosthetic appliance, and may decide whether to connect the maxillary prosthetic appliance or not depending on the ISQ value. The bone can be drilled through the fixed guided stent using anchor pins as you see in the pictures below. This shows the result of flapless minimally invasive implant surgery.

Panoramas and pictures of 10 implants placed using a maxillary stent in the same way. The customized zirconia abutment and the temporary crowns produced in advance were placed after observing a satisfactory ISQ value. The satisfactory CT results can be observed.

Mandible CT after the surgery

Maxillary CT after the surgery

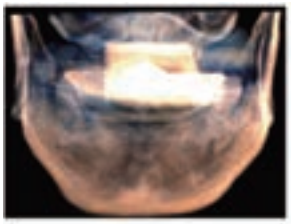
You can check the satisfactory CT results.

We produced the final prosthesis after 3 months. At this time, the mandible has zirconia abutments and temporary PMMA crowns have been placed in the mandible to allow further recovery of the patient.

This shows panoramas and standard radiographs at 1 month after the final prosthesis was placed. This has been a brief introduction to the general process of guided static surgery using R2GATE. Due to time & space limitations, this is only an overview - we hope you will be stimulated to ask for more information about R2GATE and CAD/CAM. Over the following pages, we will elaborate on the explanation and focus on the prognosis before surgery with R2GATE, on surgical simulation, and hope that the whole process will be clear.

2. Understanding and Purpose of Surgical Stent Surgery

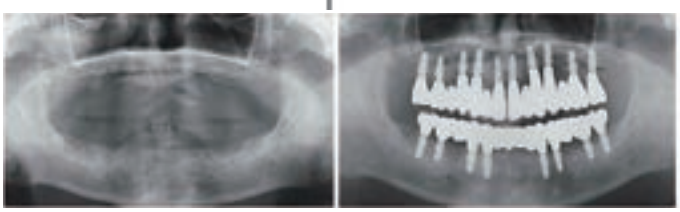
As you can see on the previous pages, R2GATE's virtual simulation has the advantage of combining DICOM (CBCT) and STL files enabling the depiction of the overall status of the patient with real time digital videos before commencing surgery. This handy function means that dentists can decide the optimal position for placing implant fixtures and allow a quick overview of the diagnostic wax-up, the soft tissue and the bone. In other words, virtual simulation has reached an outstanding level for finding implant positions as close as possible to real surgery using CAD/CAM. A simple schematic diagram follows below.



CBCT
DICOM:Digital Imaging & Communications in Medicine

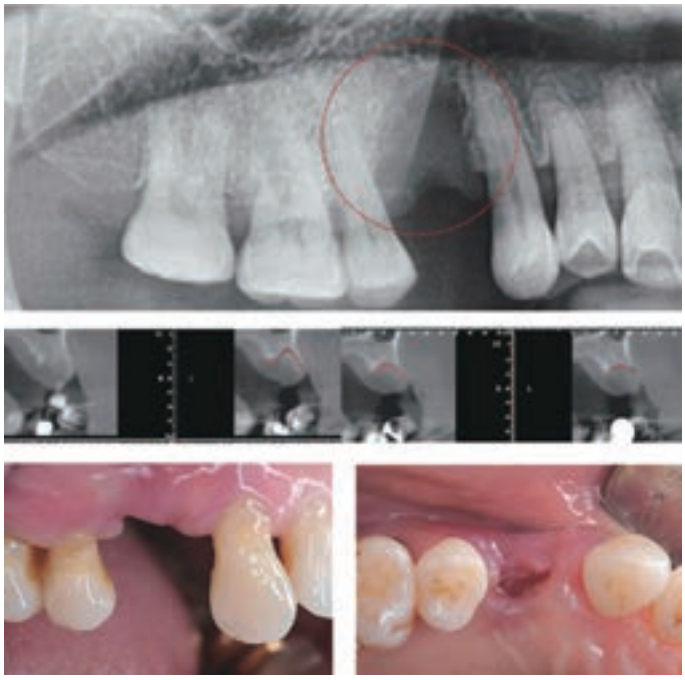
STL
Standard Tessellation Language

R2 stent surgery

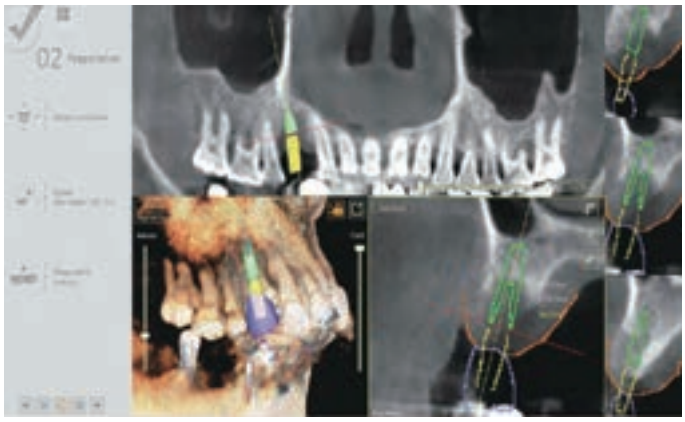


This schematic method of stent surgery can be either 'Open flap surgery' or 'Flapless surgery'. Most clinicians think that 'Guided surgery" means "Flapless surgery". With this concept, the range

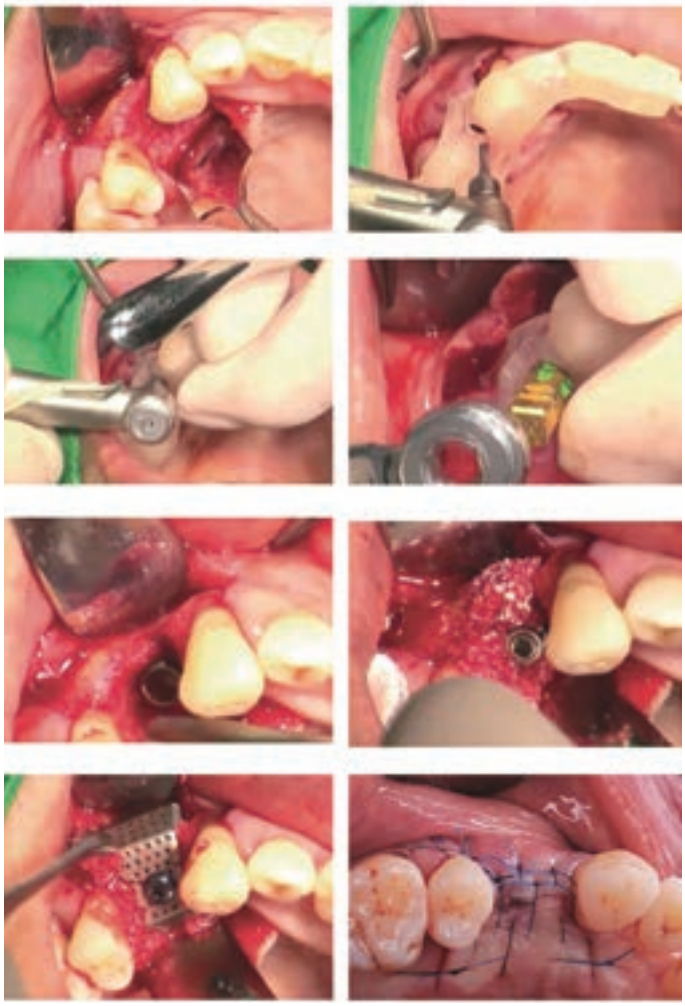
of clinical applications for drill guides is extremely limited in cases of the lack of hard and soft bone tissue. If instead, one thinks of "Guided surgery" as correct "implant position", it makes the application much more useful in many clinical cases. Here are some examples.



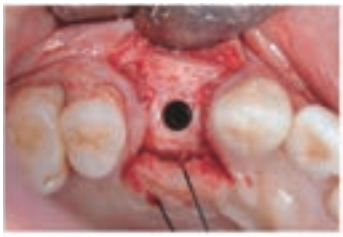
This case is a 56-year-old female with a right maxillary second premolar defect. As can be seen in radiographs, the mesiodistal "Interproximal bone level" area seems adequate, but the faciolingual area shows significant bone loss.



The defect of the mesiodistal space is quite wide, making it difficult to decide the position of both prosthesis and implantation. With R2GATE however, true virtual patient simulation procedures can be carried out.The dentist is able to determine surgical options before surgery thanks to the simulation available with R2GATE.



The position of the implants can be determined using R2GATE and easily configured – use of an R2 stent and Ti-mesh (i-Gen) is decided with the virtual diagnostic procedure. Final suturing is also shown.



◀Before and after the removal of flat abutment fixing i-Gen

4 months after the surgery

R2 stent-guided surgery is '3D positioning and realization of implantation' as you can see in the clinical case presented. Over the next pages, we will introduce a variety of clinical cases using an R2 stent.

3. Clinical cases using an R2 Stent (1)

As described earlier, the Clinical Significance of Guided Surgery using R2GATE software and an R2 stent is 3D positioning and its realization with implants. Now I would like to present some clinical cases using R2GATE software and an R2 stent.

The patient above came to the clinic complaining of movement in the #21 tooth. Cervical caries was immediately identified with the CT. This patient requested rapid, aesthetic, functional recovery over the shortest possible duration of treatments. We planned immediate loading of zirconia customized abutment and a temporary crown, if excellent initial stability could be obtained after implantation using R2GATE and an R2 stent. 2 preparations were needed in the clinic.

Firstly, an alginate impression of both the upper / lower jaw was taken and stone casts produced. Accurate impressions and stone casts are essential as they are the basis for all the material (data) using R2GATE.

Second a CBCT scan is needed. As shown in these pictures, the patient bites a unique tray (R2 tray) and the CBCT scan is shot. This R2 tray is utilized as a standard of superposition of the CBCT and the STL files. These 2 processes are preoperative in the clinic. Stone casts can be sent via parcel service and the CBCT file via internet to the R2GATE Center.

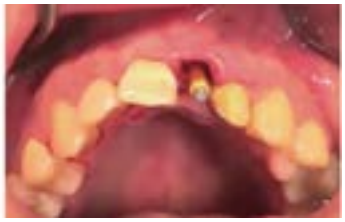
The R2 stent and prosthesis are produced with this data.


This R2 stent must be placed carefully to avoid damaging the buccal alveolar bone following the tooth extraction.


The drilling may then be performed to the size of the implant using drills exclusive for the R2 stent system exactly according to our virtually planned surgery in R2GATE. As the pictures show, complete drilling processes are recommended to be performed following the guide part of the R2 stent.


Pick up the implant after finishing drilling, using the hand ratchet connector. The correct combination between ratchet connector and fixture should be accurately checked. The fixture can then be placed in the prepared site after this confirmation.


We recommend the use of an implant motor. Once the implant is almost completely placed with the motor, the final vertical depth and position of the implant should be completed using a torque wrench to exactly match the virtual plan.

The location of the fixture may be matched to the R2GATE plan by matching the window of the R2 stent and the black line and green code on the ratchet connector.

▲ The figures above can be applied only to an AnyRidge Implant. These figures cannot be generally applied to other implant systems.

In order to assess the possibility of immediate loading, we use both the placement torque and the ISQ value. Only when using the AnyRidge System, do we try immediate loading – and then only if the placement torque is over 45N and the ISQ value is over or equal to 70 in D3~D1 bone without parafunctional problems.


The pre-made customized zirconia abutment may be connected after bone grafting the gap between the socket and the fixture.


These pictures show the temporary crown, immediately after surgery and then the healed site after 2 weeks.


After time needed for soft tissue healing, the prosthesis can be made using an impression for final prosthesis taken at the customized abutment level.

After 4 months, this is the image of the final prosthesis loaded.
For the success of immediate loading,
1. Bone quality
2. Implant design
3. Surgical technique
4. Occlusal loading control

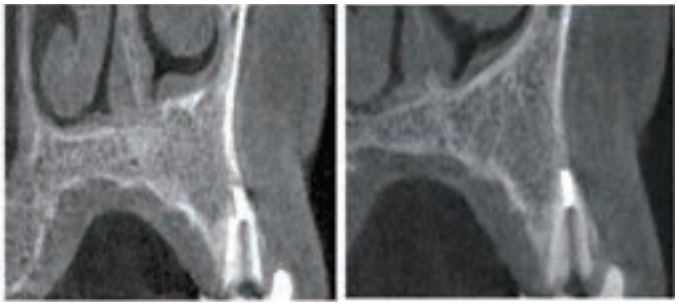
should all be considered.

Next we will introduce you to how to use the 'Digital Eye' to assess bone quality using R2GATE for surgical planning.

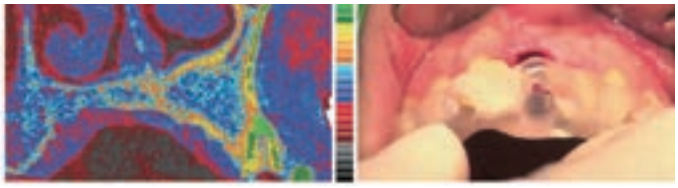
4. Clinical cases using an R2 Stent (2)

At the end of the last article, the necessary conditions for the success of immediate loading were briefly mentioned.
1. Bone quality
2. Implant design
3. Surgical technique
4. Occlusal loading control

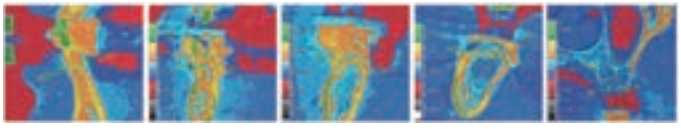
Most long-term observational research mentions that the above four requirements affect the success of immediate loading. Utilizing CBCT as an assessment of bone quality is now being introduced in research papers. In evaluating bone quality R2GATE also uses a function that enables preoperative evaluation of bone quality and makes it possible to suggest a suitable drilling sequence to increase initial stability.



CT images shown on both the left and right are the same patient's CT image. Depending on the machine, as shown in the pictures, totally different images are created. CBCT is different to MSCT (Multi Slice CT) – it does not apply the HU (Hounsfield Unit) concept. This makes it more difficult to evaluate the bone quality.

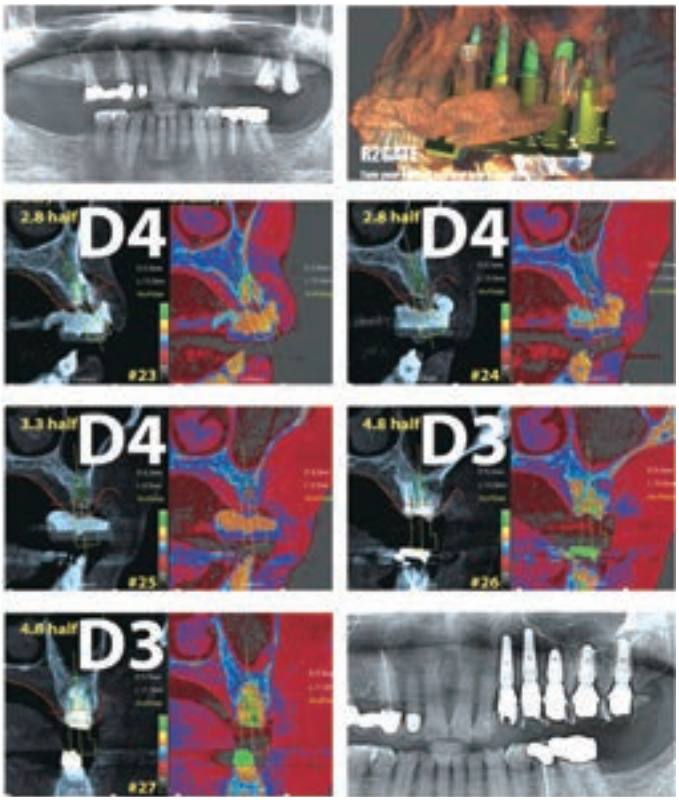


In order to resolve the disadvantages of CBCT, R2GATE has installed the 'Digital EYE'. The colors shown on the image of the soft tissue helps to understand the bone quality thanks to the contrast of color. You may identify the relatively hard cortical bone density and the cancellous bone clearly falls under classification D4 according to Lekholm and Zarb's classification. Considering this bone quality, you might make 2 step under-drilling compared to the planned fixture diameter.



[Ex. 1, 2, 3, 4, 5]

Correct drilling sequence, implant position, and loading protocol can be determined based on CT analysis. Take note though [Example 4, 5] even if initial stability can be gained by determining bone density, do you think immediate loading is always possible?
What are your thoughts, readers?

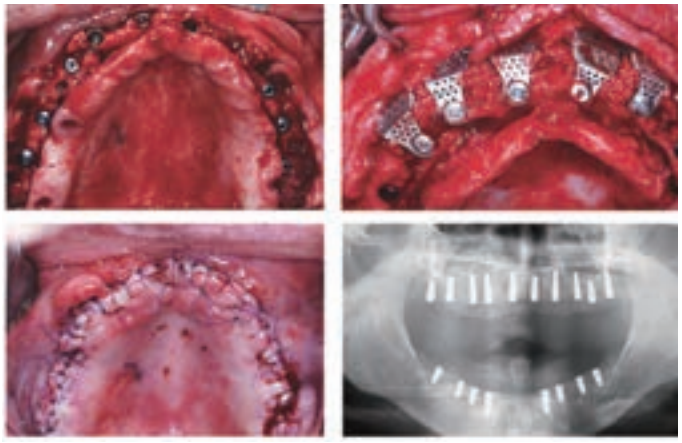


This clinical case used 'Digital EYE', predicted the bone quality and preset the Drilling sequence to obtain satisfactory initial stability, and also increased the number of implants for a 'One Day Implant' case. What would the ISQ value be at the time of surgery?

Edentulous clinical cases need restoration and we present another clinical trial. When using an R2 stent for edentulous cases, do you think that a fixation screw is the only way to obtain stability of the Stent? Tooth supported guides have the highest precision. Currently obtaining soft tissue stability using a tooth-supported system is what 'team eureka R2' is trying to do.

One way to change fully edentulous cases to a tooth-supported case would be placing mini implants. Mini implants were originally developed for the purpose of maintaining temporary dentures and can be used on edentulous cases with R2 surgery. For the mini implant placement, the implant position is not important - simply place it where it can be placed most easily.

Two R2 stents can be easily manufactured based on the basic CAD/CAM system. The first R2 stent gets support from four mini implants. The method is to place fixtures on areas not related to the location where the mini implants will be placed. Then, a surgical stent will be used to place the fixtures and finally the mini fixtures are removed.



As mentioned in an earlier article, the author placed implants on the basis of the R2 stent, executed GBR, and made the closure suturing. Once again, the purpose and significance of R2 stent surgery is not simply flapless surgery but to virtually manage & observe the result of surgery before the actual surgery following your own clinical philosophy.
'Megagen Eureka R2' started ambitiously with the intention of beginning a 2nd Renaissance in the field of implant treatment and recovery using our own program. The 'R2GATE' programme is evolving to realize this aim. Next year, we will be able to move beyond the implant field and provide new methods for GBR. In addition, using face analysis, we hope to achieve virtual surgery on the lower jaw.

*** This clinical case can be viewed on www.R2GATE.com**
'How to get a reliable ISQ value'

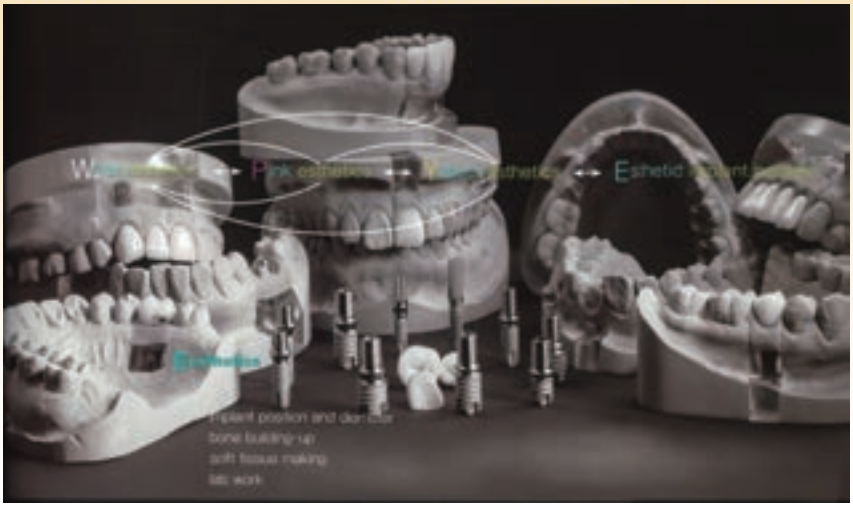
2014 昇基公司植牙高峰論壇

假牙安裝是你的夢魘嗎？

假牙美學新境界—簡單 省時 精準 美觀

時間：103年11月22日(六) 3:30 ~ 6:30 pm

Dr. Park 現身說法。製作精準、快速又簡單的漂亮假牙，
讓您體驗先進數位新科技美學。



Esthetic Considerations for Implant Dentistry

亞洲植牙教父
Dr. Kwang Bum Park主講

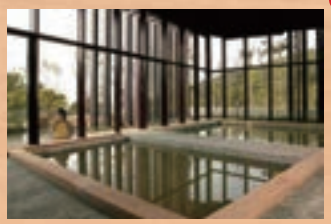
礁溪老爺秋風溫泉渡假

中華民國臨床植牙醫學會專科醫師學分：3 學分

時間：103年11月22日(六)~23日(日)

週六下午高峰會論壇、晚間自助美食饗宴。
住宿貴賓自行Go：露天風呂溫泉與親子DIY創意活動、星光舞台歌仔戲或絲竹音樂會。
樂遊高爾夫綠地槌球或腳踏車自在山間騎遊。飯店內各項育樂設施享受悠閒時光。

老爺住房：雙人房（可帶一人同行）



超值包

植牙論壇＋度假＋贈品

贈品詳細說明

報名費用　五萬元

好禮5選1

限量	Ti-Star Trial Set	$ 48,000
限量	A+ Trial Set	$ 50,000
	911 Kit	$ 55,000
	MILA Kit	$ 50,000
	I-GEN 大組 (12片裝)	$ 51,000

活動內容請洽您專屬業務

■主辦單位：昇基事業股份有限公司　■協辦單位：中華民國臨床植牙醫學會

台北市忠孝東路五段815號12樓 02-27881335 | 台中市西屯區工業區一路12號2樓 04-23551359 | 高雄市前鎮區中山二路2號19樓之5 07-9511335

Dr. Han

2009 6th Worold Congress IFED

Interviewer: We're so glad to invite Dr. Thomas J. Han as our cover story for the summer periodical issue this time. As an implantologist and scholar, we know you have over 30-year teaching and practice experience. We know you have so many clinical cases. Do you still doing the dentist job now?
Dr. Han: I do have documented many clinical cases over the last 30 years of periodontal and implant surgery practice. Presently, I am a part-time Clinical Professor of Periodontics at the Ostrow School of Dentistry at USC, and I see private patients about one day a week.

Question 1 : Implant technologies / techniques

There are many methods of working with dental implants. Can you share with us the techniques and technologies you have used and what your thoughts are on them? How do we gain access and practice these techniques and technologies for those of us who have had no experience with them?

Dr. Han: You're right, there are many different ways of approaching a dental problem, special in implant surgery. My approach always been making implant surgery minimally invasive and more patient friendly. The goal of implant dentistry is not surgery. Our ultimate goal is to provide biologically compatible, functionally and esthetically acceptable restorations for patients, which will last.

To achieve acceptable esthetics in implant dentistry in anterior segments of mouth, there has to be appropriate gingival foundation. Some call this "Site Preparation", and depending on surgical approach used, this can take multiple surgeries, and 1-2 years of treatment time. This is not easy for patients. There are surgical approaches and techniques available today to decrease the number of surgeries and time necessary to provide esthetic gingival foundation for implant restorations, which are much more easier on patients. Of course, these newer approaches and techniques cannot be anecdotal, must be based on biologic and scientific principles, and should have literature support.

Today, we have much more clinical and scientific knowledge than 10-20 years ago, dental materials are superior, and certain implant designs provide greater clinical advantages. Digital science and technological advancements are converging with clinical requirements to make dental implant therapy functionally, esthetically and biologically much more predictable and patient friendly. However, it is

amazing that so many practicing clinicians still adhere to the way the implant therapy were done 10-20 years ago.
Of course, these new approaches and techniques must be studied and learned. But there are many journals, books, and courses available today to obtain the necessary information to perform these procedures. Those dentists with considerable implant dentistry experience can learn new techniques much faster. But for others, sufficient learning probably will take more extended courses than just one or two days.

Question 2 : Philosophy on being a dentist

As a successful dentist and scholar, what characteristics do you think are most important to achieving successes like yours? What are the characteristics you look for in other dentists?

Dr. Han: I guess it all depends on how you measure success. I have always measured success on personal satisfaction I derive from treating patients the best I can, achieving excellence whenever I can. Dentistry has inherent conflict of interest. More procedures we do, we make more money. There is always a risk of over treating patients and doing less than quality dentistry. Therefore, I believe one of fundamental characteristic dentist should possess is ethical desire to treat patient right. In the United States, dentists are regarded as one of the most trusted professional. I believe we need to live up to that.

Another character requirement for a dentist to be responsible and effective is that he does not mind being a continual student. Because dentistry is constantly evolving and improving, it is imperative that dentists must study continually throughout his career.

This has its own rewards, however. I believe as long as our mind stays flexible and we are learning, we stay younger.

If a dentist treats a patient improperly because he was dishonest, or because he did not have the necessary knowledge and skill, which do you think is worse. For the patient, it probably is same. It is dentist obligation to do all he can to try to provide the best, most up to date treatment possible.

For me, being involved in teaching help me to stay on top of changes in dentistry the past 30 years. Looking back, I am grateful for that, and I recommend to all those aspiring young dentist to get involve in education, if they can. It is professionally rewarding and worthwhile.

Questions 3 : Teaching experience

You have had a wonderful teaching career with invited lectures in the USA and though out Asia from 1984 till now. With such a vast teaching experience, what are your thoughts on effective teaching?

Dr. Han: I have seen many effective teachers, with their own strenght and weaknesses.

What I bring to teaching in periodontal and implant surgery is extensive clinical experience combined with biologic and clinical science. We often talk about evidence based implant dentistry. However that information must be combined with judicious clinical experience and expertice based on individual needs of patient.

Often students can not distinquish the biases in the literatures. They cannot determine correctly if a conclusion from a study is applicable to what they are doing in their practice. It is my job to teach them to learn new information in a proper contex and perspective in relation to their

Moderating, Any ridge Dental Implant Study Group Netherlands,2012

MegaGen Europian Scientific Meeting 2014

patient treatment. My 30 years of extensive private practice along with teaching, helps me to evalute new information in the contex of clinical practicality, based on science.

Another important aspect to teaching is that I can not forget that I am a continual student as well. We should not be afraid to learn from our students. New ideas must be encouraged, and sometimes, we need to push the envelope of treatment modalities, as long as they are based on rational biologic and surgical principles. In implant surgery, if we always wait for literature confirmations before utilizing a new approach or technique, then we will be 10 years behind. Many of scientific studies to confirm clinical findings take years to surface in the literatures. That is the nature of scientific studies in implant dentistry.

Also, to be an effective teacher in implant surgery, I need to have fairly in-depth understanding of other discipline of dentistry, namely prosthodontics and orthodontics. Of course this includes occlusion, TMJ as well as other restrorative knowledge. Because implant positions should be restoratively determined, treatment planning the exact position of teeth in relation to patient's dentofacial esthetics and function before performing surgery is very important. Interdisciplinary treatment planning is the key. Furthermore, to be an effective teacher today requires good understanding of the digital technology. Implant dentistry is rapidly adapting new technologies, and I need to prepare my students for the coming change.

Finally, I did develope some surgical techniques which are beneficial for certain conditions in patients' mouth. However, I have been told these techniques are sometimes difficult for other clinicians to perform. What I need to do better is develop instrumentations which make these techniques easier for all dentists to complete with predictability. I am in a process doing that.

Discussing surgery with periodontal residents

Question 4 : Activism in dental care

With a global trend of aging populations, dental care has become increasingly important as part of a health care system. As a deeply experienced dental practitioner, have you participated with institutes or organizations to improve local dental health? What are your thoughts on how dentists could be important components to promote dental health locally?

Dr. Han: As a practicing periodontist, my focus always been preventing teeth loss. Emphasizing good oral hygiene habit, early detection of dental and periodontal disease process, and timely intervention maintains oral health and prevents tooth loss . It is partly anecdotal as well as scientific, but I do feel that when a patient have good mastication, he seems to be healthier and happier. That is what I want for myself and my family.

More often than not, dentists are good at treating problems when there is patient complaint of dental or periodontal pain or destruction. As we face aging population, it is becoming more important for dentists to become more of diagnosticians of abnormal chronic dental and periodontal destructive process, before symptoms appear or noticed by patients. This entails dentist's understanding of biological, functional and chemical etiology and mechanism of tooth and periodontal destruction over time. Dentists need to know what options there are available to prevent further destruction, and they should have clinical ability to render the necessary treatment with predictability and efficiency. Furthermore, we are becoming more aware of the impact of dental related diseases on general health of patients, and vice versa. This relationship will only get more pronounced as the age of the population increases. As examples, there are evidences correlating airway obstruction in children with learning disability. Chronic

infection of periodontal disease can influence cardiovascular disease process of a patient, and sleep related respiration disorder can effect general health as well as teeth destruction. I believe early recognition and treatment of these disorders should be and will be an integral part of dental treatment in near future.

As to getting involved in organizational dentistry, I believe more dental related activities one can involve him or herself, the better is it for professional enhancement. I am involved in many dental organizations, as a member and officer capacity, and I enjoy the learning and camaraderie very much. Each organization have its own missions, and they often include community services and education.

Solving surgical problems with Dr. Dennis Smiler, 2013 Maastricht

Question 5 : Developing the trust with patients

With your deep clinical experience, we were wondering what your thoughts are on winning patients'trust? How do we build an effective and positive doctor-patient relationship? In your mind, what is the most important aspect of a dentist that patients would like to see?

Dr. Han: I agree that trust between dentist and patient is very important in dentistry. In general, it starts with each side wanting to do what is best for each other. With that, there are so many different ways , so I can only speak for myself. Besides having a proper up-to-date facility, trained staffs, and doing all one can to keep up with new knowledge and techniques, there are couple of things we can do to increase our rapport with patients.

With increased information available to patients through social media and internet, I believe it is better for a dentist to tell his or her patients all options available, and truth about pros and cons of each of those options, which is based on scientific and clinical evidence and rational. I have always believed in getting patient involved in decision making process, and giving them time to think about their options. Until I feel the patient has reasonable idea of what we are dealing with and what options are available, I try not to be too persuasive toward what I feel is best for her. When I am not certain of the treatment direction I need to take, I ask myself if this is what I would for myself under the given situation. Sometimes, I feel I need a second opinion to confirm my diagnosis and treatment plan. I had a very large group practice, with over 10 dentist and specialists working together under one roof. This was our protocol, and it worked well over the years.

Many times we tell patients what needs to be done and, why and how. Patients often nods, indicating that they understood, but many times they don't have a clear idea. This happens even with best intensions. I am referring to communication break down. Today there are many softwares which can help patient visualize what you want to get across to the patient. Increase use of intra and extra oral photographs of the patient you are treating and utilizing these new digital technology will increase communication and trust.

If I may be a bit philosophical, I believe being the kind of dentist I would like to be is an extension of the kind of person I want to be. In other words, generally the qualities which make a good human being makes a good dentist. Being good at what I do, striving for excellence, solving problems, enjoying the process as well as the fruits of the labor, surrounding myself with likeminded professionals who bring conformation and joy, being dependable and responsible with balanced approach to getting things done are some of these qualities I strive for in life as well as in dentistry.
I think patients will appreciate these qualities in their dentist as well.

Someone once told me that whether one has succeed or not in life, he will know in his death bed. If he does not have much regrets, then his life was a success. I hope I will not have too much regrets when the time comes.

Crestal Sinus Lift:
A Minimally Invasive and Systematic Approach to Sinus Grafting

Internal Sinus Kit

Samuel Lee, Grace Kang Lee, Kwang-bum Park, Thomas J Han

Abstract

Background: The placement of dental implants in the posterior maxilla is often a challenge due to pneumatization of the maxillary sinus. Dental surgeons have predictably overcome this obstacle by performing bone grafting procedures such as lateral window maxillary sinus augmentation (modified Caldwell-Luc). Although predictable, this technique produces patient morbidity including postoperative bruising, pain, and swelling. To reduce such morbidity, many internal (crestal) approaches to sinus grafting have been introduced using a variety of specialized instruments. One problem associated with such techniques is lack of visibility when opening the sinus floor and manipulating Schneiderian membrane. This case series reports on a new crestal approach to maxillary sinus augmentation that results in reduced patient morbidity and improved intra surgical visualization.

Methods:

5 patients were treated with the crestal window maxillary sinus augmentation approach. Preoperative radiograph and CT scan analyses were performed on all patients. A combination of specialized trephines was used at slow speeds (40-50 RPM) to access the maxillary sinus. Multiple specialized elevators were then used to elevate the Schneiderian membrane via the crestal window and particulate graft was added to the sinus. Dental implants were placed, typically in a single staged approach.

Results:

All 5 cases in this series resulted in successful clinical outcomes with adequate sinus augmentation and implant survival.
The patients experienced minimal morbidity associated with the crestal window approach to maxillary sinus augmentation.

Conclusion:

The crestal window approach to maxillary sinus augmentation is a simple, predictable technique with low patient morbidity.

Introduction

Due to pneumatization of the maxillary sinus, poor bone quality and quantity, treatment of posterior edentulism has been and continues to remain a challenge for dental physicians. Traditionally, these obstacles are overcome by bone condensing and grafting into the maxillary sinus beneath the Schneiderian membrane. Bone grafting into the sinus has produced predictable results enabling clinicians to place longer implants for more stable prostheses and better long term outcomes. Although final outcomes have proved satisfactory, sinus augmentation via lateral window grafting procedures produces substantial patient

morbidity. Because this technique involves flap elevation beyond the mucogingival junction, bruising, swelling, and pain are common postoperative complications. An additional intraoperative complication associated with this procedure may arise from the laceration of the intraosseous branch of posterior superior artery (branch of maxillary artery). Finally, the technique sensitive nature of the lateral window approach carries a risk of Schneiderian membrane perforation during window preparation and membrane elevation. In an attempt to forgo the risks and complications of lateral window sinus augmentation, a number of internal (crestal) approaches to have been introduced such as osteotome, reamers, tapping drills, piezoelectric, ISM, and HSC. With most of these internal techniques for sinus augmentation, poor visibility during manipulation of the Schneiderian membrane remains a problem. While a great solution for the premolar region, use of standard diameter implants (4.0mm) in the molar region has limitations such as poor emergence profile, implant fracture, and crestal bone strain. Large platform diameter implants may overcome poor bone quality by increasing bone to implant surface contact in addition to producing superior emergence profile. Use of such implants in molar areas may also decrease fracture risk, crestal bone stress, and allows fabrication of a natural occlusal table. The purpose of this paper is to describe an innovative surgical technique that combines a crestal internal sinus lift with use of wide diameter implants.

Description of Surgical Technique

Flap Elevation

Incision design that is at least 2 mm palatal to desired implant position and flap elevation that does not extend beyond the mucogingival junction is recommended (figure 1). This incision design allows for minimal pain, unilateral flap retraction, the option of doing one or two stage implant placement without losing keratinized tissue, and the ability to treat oral antral communications in case of excessive Schneiderian membrane perforation.

Figure 1: Palatal incision design.

Location of Crestal Window

When performing this technique, the lowest point of the maxillary sinus should be located by means of radiographic or cone-beam/ct options (see arrow in figure 2). It is most favorable when this position coincides with implant position. If implant placement at sites #2, 3, and 4 are anticipated with site #3 being the lowest point in the maxillary sinus floor, site #3 should be used to lift the sinus membrane.

Figure 2: Crestal sinus lift initiated from lowest point of maxillary sinus (arrow).

Crestal Window Preparation and Membrane Lift

To perform the crestal internal sinus lift, a round window is made on the crestal bone with a set of specially designed trephine burs that have a diameter 1 mm less than the final implant size.

For example, if a 6mm implant is anticipated, a 4.0mm (inner diameter) x 5.0mm (outer diameter) trephine is used. Unlike the conventional trephine techniques that require 700-1000 rpm with ample irrigation, this technique utilizes lower speeds of 40-50 rpm without irrigation and is referred to as a " Waterless technique. " The waterless technique has the advantage of not washing away autogenous bone filings during bone manipulation, thus allowing the surgeon to collect an increased amount of autogenous bone.

Conventional trephining with precision is often challenging due to skipping or drifting of the trephine during initial bone cutting. To minimize this complication and maximize visualization and precision of the trephine bur, a "pointed trephine " is used at a speed

of 50 rpm without irrigation (figure 3). The pointed trephine is used to mark the location of the intended crestal window and only penetrates the cortical crest (figure 4).

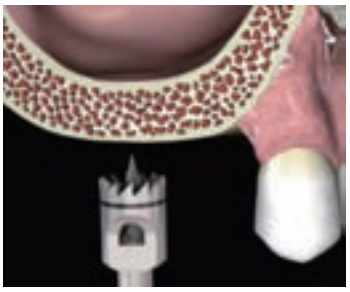


Figure 3: Pointed trephine used to mark precise location of crestal window position.

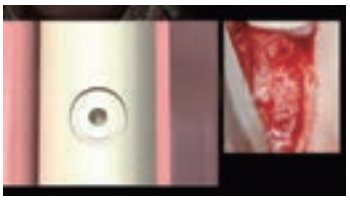


Figure 4: Crestal marking after use of pointed trephine.

The second step in this technique utilizes a trephine with an internal adjustable stopper (ASBE trephine). Radiograph or cone-beam/CT is used to measure the width of residual native bone from the ridge crest to the floor of the sinus and 1 millimeter is subtracted from this distance. The adjustable stopper within the ASBE trephine is then set to such a length to prevent perforation of the maxillary sinus floor. For example, if 6mm of native residual bone remains from the ridge crest to the floor of the maxillary sinus, the ASBE trephine adjustable stopper is set to 5 mm. At a speed of 50 rpm, the ASBE trephine is used to penetrate the ridge crest and remove a bone core (figure 5). Although the ASBE trephine is set to a length 1mm short of the sinus floor, bone core removal will often expose the Schneiderian membrane (figure 6). In cases where the sinus floor is extremely dense or on an inclined plane, 1mm of cortical bone may remain at the floor of the maxillary sinus. In the event that 1mm of residual bone remains at the sinus floor following use of the ASBE trephine, a specialized wide diameter "sinus diamond bur " is used to expose the Schneiderian membrane. The specialized sinus diamond bur contains a shoulder stop that prevents drilling into the Schneiderian membrane. Additionally, as the sinus diamond bur grinds the residual cortical bone, resultant fine bone particles act as a buffer between sinus membrane and diamond bur (figure 7).

With the third step in this technique, elevation of the maxillary sinus Schneiderian membrane is accomplished. Following preparation of the crestal window, a "mushroom elevator " is used as a probe for tactile feel of the sinus floor and detection of membrane exposure. The maxillary sinus floor is rarely perfectly flat, so it is common to find initial sinus membrane exposure at the corner of the osteotomy rather than at the center (figure 8). Once the mushroom elevator slightly drops into the maxillary sinus and the Schneiderian membrane is felt, membrane elevation is initiated (figure 9). This same elevator is also used to break

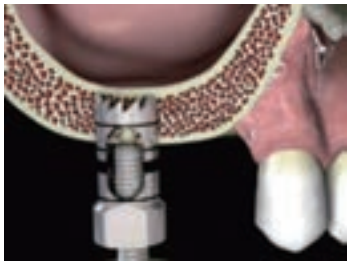


Figure 5: Adjustable stopper and bone ejector (ASBE) trephine used at 50 RPM to a point 1mm short of the sinus floor.

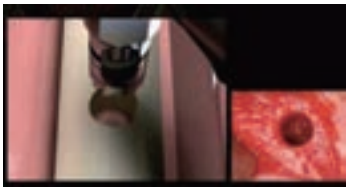


Figure 6: Sinus floor removed with trephine exposing Schneiderian membrane.

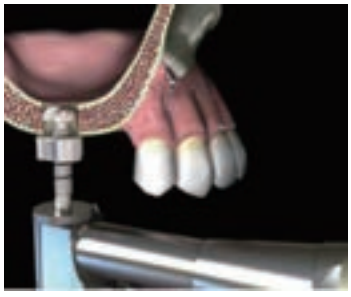


Figure 7: Specialized self-limiting diamond bur may be used to remove residual bone on sinus floor.

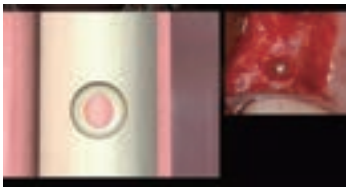


Figure 8: Crestal window after use of specialized self- limiting diamond bur.

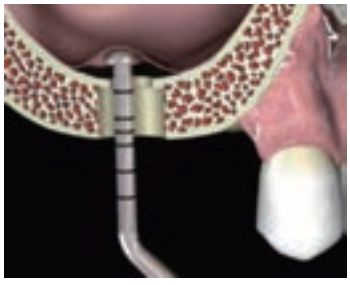


Figure 9: Mushroom elevator used to initiate Schneiderian membrane elevation.

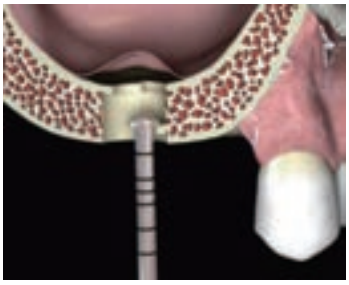


Figure 10: Mushroom elevator may be used to remove residual bony ledges at crestal window.

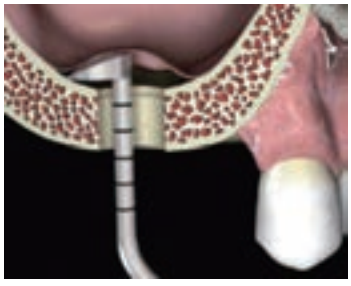


Figure 11: Cobra elevator used to elevate Schneiderian membrane mesially and distally.

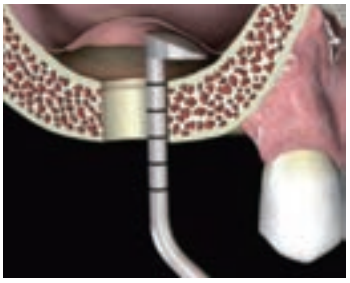


Figure 12: Cobra elevator further elevates Schneiderian membrane and may be used to scrape sinus floor to induce bleeding.

away any remaining ledges of bone in the osteotomy site that interfere with sinus membrane elevation (figure 10). After initial Schneiderian membrane elevation, the "Cobra sinus elevator " is used to further elevate the sinus membrane and scrape the bony sinus floor to promote bleeding in the sinus cavity (figures 11 and 12).

Bone Condensing and Implant Insertion

To accommodate a wide diameter implant of sufficient length, bone graft is added to the maxillary sinus. A combination of lateral and vertical condensation of particulate bone is used to augment the sinus and produce additional lift of the Schneiderian membrane (figures 13 and 14). Lateral bone graft condensation is critical to reducing pressure on the Schneiderian membrane and, thus, reducing the risk of perforation. This method facilitates healing by increasing blood supply from the lateral and medial wall. Under-preparing the diameter of the osteotomy in relation to the implant is recommended to achieve bone compaction and improve initial fixture stabilization (figure 15).

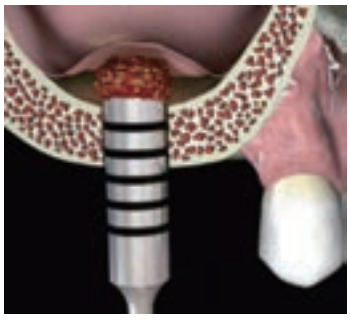


Figure 13: Bone graft added to prepared maxillary sinus.

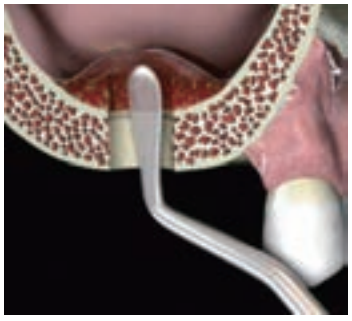


Figure 14: Lateral condensation of bone graft into prepared maxillary sinus.

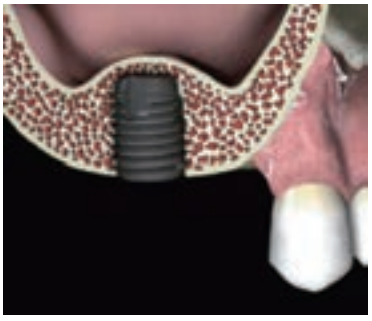


Figure 15: Implant insertion into prepared maxillary sinus.

Case 1

A 29 year old non-smoking Asian female with a noncontributory medical history had extraction of tooth #14 three months prior to implant surgery and site #15 edentulism for 5 years. Preoperative radiographs showed 4-6 mm of residual bone height between the ridge crest and the maxillary sinus floor (figure 16). Cross sectional CT revealed no signs of sinusitis, ostium patency, and a thin Schneiderian membrane (figure 17). Coincidentally, the patient also had a very thin gingival biotype. There is no known study correlating gingival biotype with Schneiderian membrane thickness, but through the author's clinical experience it has been observed that patients with a thin gingival biotype tend to have thinner sinus membranes (unless he/she is a smoker).

The patient's sinus floor was relatively flat, thus it was expected that the sinus floor could be removed with the bone core after use of ASBE trephine (figure 18).

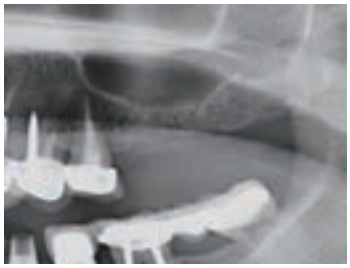


Figure 16: Case 1 presurgical radiograph of left maxillary sinus.

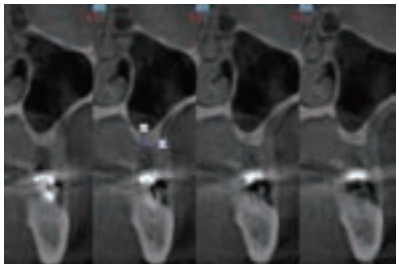


Figure 17: Case 1 cross sectional CT images.

Figure 18: Case 1 left maxillary ridge following use of ASBE trephine. Note exposure of intact Schneiderian membrane.

Trephine with the Waterless technique was used to remove the crestal bone core. Rotation of the bone core within the trephine is an indication that the sinus floor is broken and no further apical pressure of the trephine is recommended to avoid cutting sinus membrane. Autogenous bone collected from the trephine was made into particulate graft and condensed into the maxillary sinus. After initial elevation of the Schneiderian membrane with the mushroom and cobra elevators, slow bone compaction was accomplished by inserting the condenser no more than initial height of residual bone (figure 19). Next, lateral condensation was achieved by the use of a "sinus spreader " instrument (figure 20).

Figure 19: Case 1 vertical condensation of bone into maxillary sinus.

Figure 20: Case 1 lateral condensation of bone into maxillary sinus.

To allow for single stage implant surgery, the implant osteotomy was under-prepared in diameter to achieve good initial stability through compaction of porous quality bone during implant placement. A palatal incision design allowed for preservation of keratinized tissue following placement of the healing abutments. (figure 21). Panoramic and CT scans were accomplished after surgery to verify proper grafting of the maxillary sinus without perforation and to note horizontal compaction of bone graft touching the medial and lateral walls (figure 22).

Figure 21: Case 1 closure. Note preservation of buccal keratinized gingiva due to palatal incision design.

Figure 22: Case 1 postsurgical radiograph and CT image.

Case 2

A 53 year old non-smoking Asian male with a noncontributory medical history presented for implant placement. Preoperative radiographic and CT scan evaluation revealed a patent ostium and no signs of sinusitis. The lowest point of the maxillary sinus floor was located at site #3 with residual bone height of 6.5mm. In this case, due to the high density of the sinus floor, removal of the trephine core left approximately 1mm of residual bone on the sinus floor. The self-limiting sinus diamond bur was used to safely expose the Schneiderian membrane (figure 23). Next, the Schneiderian membrane was elevated with the aforementioned elevators and bone grafting was achieved using demineralized freeze dried bone allograft (DFDBA) mixed with autogenous bone graft (figure 24).

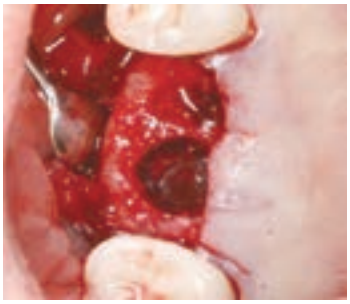


Figure 23: Case 2 maxillary ridge following use of ASBE trephine. Note exposure of intact Schneiderian membrane

Figure 24: Case 2 postsurgical radiograph

Case 3

A 60 year old Asian patient with a non-contributory medical history and current smoking status presented for implant treatment. Radiographic and CT scan evaluation revealed residual bone height of only 1.5mm at site #14. As this site was the lowest point of the maxillary sinus in relation to the residual ridge, site #14 was used to lift the Schneiderian membrane and an implant was

placed at sites #13 and #14 after grafting. The sinus diamond bur was used to penetrate to the bone directly instead of using trephine bur because the residual bone height was only 1.5mm (figure 25). After visual confirmation of sinus membrane exposure, membrane elevation was accomplished with the mushroom elevator (figure 26). A remaining ledge of bone in the osteotomy was removed with an implant osteotomy drill at low speed using the waterless technique (figure 27). After bony ledge removal, introduction of "cobra elevator " was possible to further elevate the sinus membrane in all directions. Bone was then condensed into the sinus and the implant was inserted, skipping the last drill sequence (4.3 mm diameter drill instead of 4.6 mm drill for 5.1 mm implant). Good primary stabilization of the implant was achieved and a postoperative radiograph revealed adequate sinus augmentation (figure 28). Cross section from a CT scan showed the medial and lateral wall fully elevated to maximize blood supply to the graft (figure 29). Note the thickness of the Schneiderian membrane on the unelevated lateral and medial walls. Because this patient was a smoker, the membrane is exceptionally thick.

Figure 25: Case 3 maxillary ridge following preparation with specialized self–limiting diamond bur. Note sinus membrane at center of preparation.

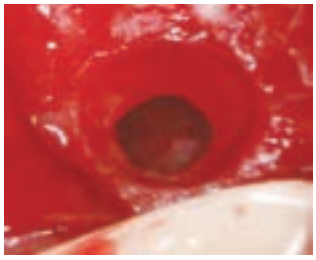


Figure 26: Case 3 membrane elevation with mushroom elevator.

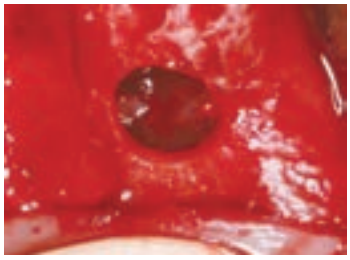


Figure 27: Case 3 crestal osteotomy following ledge removal.

Figure 28: Case 3 post surgical radiograph. Note 12mm elevation at site #14.

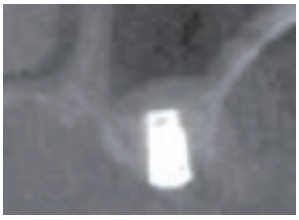


Figure 29: Case 3 cross sectional CT image. Note excellent lateral condensation.

Case 4

A 53 year old patient with a non-contributory medical history and current heavy smoking status presented for implant treatment. As was the case with the patient in Case 3 of this series, the patient's smoking history resulted in a Schneiderian membrane that was very thick. Radiographic and CT scans revealed a patent ostium, no signs of sinusitis, and 2mm of residual bone height at site #15 (figure 30). The lowest point of the maxillary sinus (site #15) was used to elevate the Schneiderian membrane. Sinus augmentation was achieved with DFDBA using mostly with lateral condensation rather than vertical condensation (figure 31). Implants were placed at sites #13, #14, and #15 (figure 32). One mistake that the author made was not overgrafting with DFDBA. It is the author's experience that DFDBA tends to resorb faster and have more shrinkage than other bone graft materials. However, one advantage is that it is not too radiopaque. Therefore, when DFDBA is replaced by host bone, the clinician can have visual confirmation by observing radiopacity from new bone as well and new cortical bone formation on the new sinus floor (figure 33).

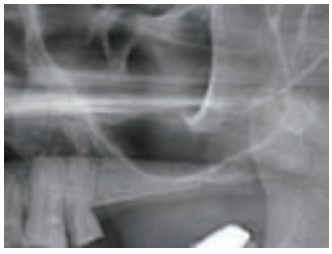


Figure 30: Case 4 presurgical radiographic image of left maxillary sinus.

Figure 31: Case 4 cross sectional CT image of initial bone condensation.

Figure 32: Case 4 radiographic image following additional implant placement.

Figure 33: Case 4 two year postsurgical radiograph.

Case 5

A 39 year old non-smoking Asian patient presented for implant treatment. Radiographic and CT scans revealed a patent ostium, no signs of sinusitis, and a residual bone height only about 2mm at sites #14 and #15 (figure 34). Under preparing the implant osteotomy is crucial in this case to make initial stabilization successful. As discussed above, the crestal window approach is easier if residual bone height is thin as in this case. To avoid bone shrinkage as observed in case 4, the author used a long lasting resorbable membrane under the Schneiderian membrane.

Figure 34: Case 5 presurgical radiographic image of left maxillary sinus.

The crestal window in this case was only 4mm in diameter. Therefore, insertion of the resorbable membrane was achieved by rolling the membrane after soaking in saline with tetracycline (figure 35). Lambone has excellent plasticity, so once inserted into sinus cavity via crestal window it will open and return to its original shape (see arrow in figure 36). Postoperative radiograph evaluation revealed an adequate sinus augmentation housing implants at sites #13-15 (figure 37).

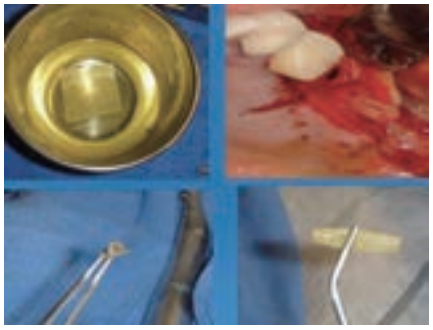


Figure 35: Case 5 membrane insertion into prepared maxillary sinus.

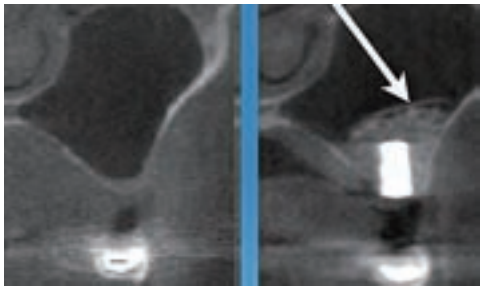


Figure 37: Case 5 postsurgical CT image. Note excellent lateral bone condensation and resorbable membrane (arrow).

Figure 36: Case 5 post surgical radiograph.

Discussion

The morbidity associated with lateral window sinus augmentation and the "blind " nature of closed sinus lifts necessitated the need for an alternative to these techniques. As shown in the many clinical cases of this series, the "Crestal Window Technique " predictably allows for elevation of the Schneiderian membrane without the morbidity associated with lateral window technique. With proper sinus instrumentation (mushroom, cobra, bone carrier, vertical condenser, lateral condenser) and bony cutting tools (pointed trephine, ASBE trephine, sinus diamond bur), the crestal window approach is predictable and results in similar outcomes to lateral window techniques in terms of membrane elevation and bone condensing.

Indications for the crestal window technique are an edentulous maxillary posterior site with residual native bone height of 1-7mm. It is the author's experience that elevation of the Schneiderian membrane with the cobra elevator is easiest when there is less residual bone height as this reduces interference of bone on the instrument during membrane elevation. In cases of extremely thin residual bone, the author recommends that the sinus diamond bur be used to penetrate to the bone directly instead of using the trephine. This will reduce the likelihood of Schneiderian membrane laceration. Finally, as a terminal step prior to bone grafting, the author recommends the cobra elevator be used to induce bleeding inside the sinus by scraping the bony floor.

Conclusion

The crestal window technique is an alternative to conventional lateral window and closed maxillary sinus augmentation techniques. This technique requires the use of specialized instrumentation that is unique to the procedure.

2014.8.17

打破魔咒

植牙實務分享論壇

植牙骨量不足時GBR省錢大解密!

講師：楊昌儒 醫師

日期：2014.08.17 (日) 09:00~12:00

地點：昇基公司台北辦公室(台北市忠孝東路五段815號12樓)

Thor骨刀絕配 + i-Gen補骨 + Auto Max 取骨

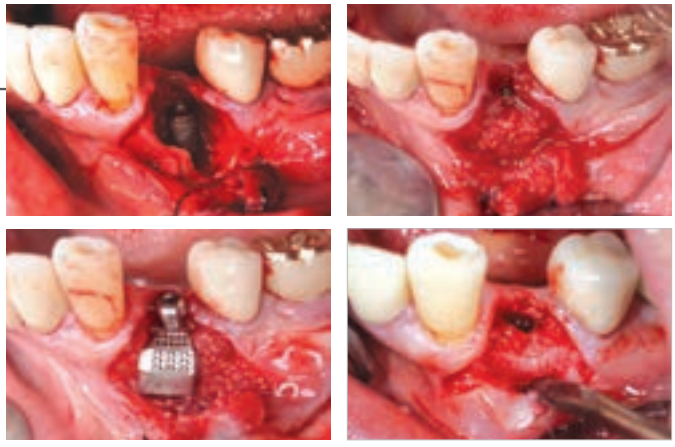
臨床上如何重建齒槽骨的缺損區？當齒槽骨的寬度不足時，齒槽骨手術及補骨GBR將助您一臂之力！本課程將介紹GBR的趨勢及技巧，讓您輕鬆GBR。

成功的植牙手術究竟需要那些條件? AnyRidge植體刀刃螺旋設計搭配Thor骨刀利器、i-Gen補骨、與Auto Max取骨無縫整合。本論壇將綜合完整植牙所需俱備的技巧及工具，為您從植體、手術到補骨GBR等攻略心法一網打盡，由臨床經驗來深入瞭解完整的植牙治療風貌。

Speaker 講師

楊昌儒 醫師

宏儒牙醫診所院長
台大牙醫學系學士
台大臨床牙醫研究所碩士
北市牙科植體學會理事



主辦單位
中華民國臨床植牙醫學會

協辦單位
昇基事業股份有限公司 SUNRISER MEDICAL CO., LTD.
T-PLUS Dental Implant

繼續教育積分：3學分
中華民國臨床植牙醫學會專科醫師學分:3學分
報名費用：1,200元(免費名額請洽昇基公司)
報名人數：60名/場

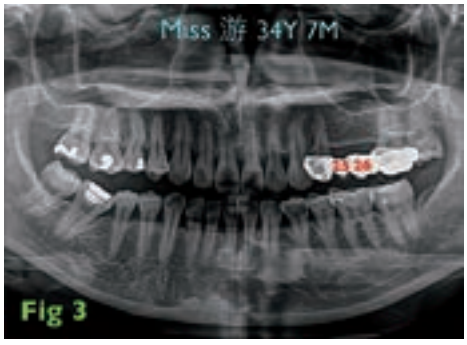
報名專線：02-7722-6987 洽 楊小姐

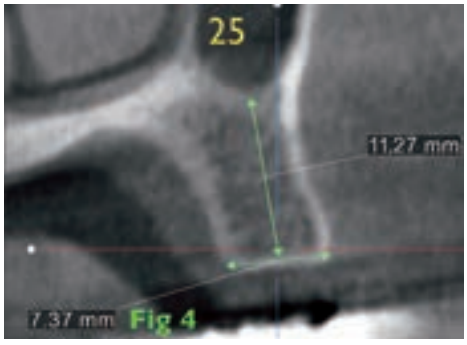
One Day Implant 臨床案例分享

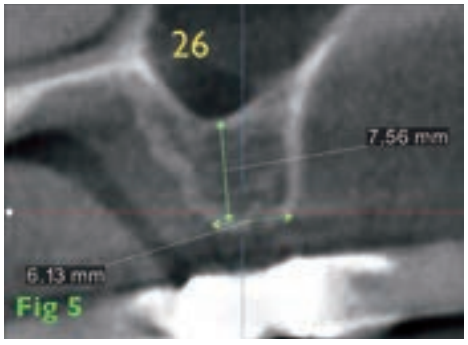
林伯璣 醫師

學歷 清華大學工學士
台灣大學牙醫學士
經歷 羅東博愛醫院牙科主任
台大牙科兼任主治醫師
美國USC植牙專科訓練
美國UCLA植牙專科訓練
現職 名人牙醫診所負責人

Miss 游，34Y7M，求診主訴 ：左上牙橋在第一小臼齒唇側，部分瓷粉脫落，見到內層金屬（Fig 1,2)，想重做牙橋，並主動詢問植牙相關事項。口內檢查 (Fig 1,2) 游小姐左上缺第二小臼齒和第一大臼齒，從第一小臼齒到第二大臼齒共四單位的牙橋。全景 X 光片 (Fig 3) 顯示骨質良好，CT(Fig 4,5) 顯示骨頭寬度和深度均適合植牙，且是極適合 One Day Implant(ODI) 的 case。







和患者討論諸項治療計劃後，她選擇最 Minimum Invasive 的 ODI 治療。於是拆除牙橋 (Fig 6,7)，印模、咬 Bite、再照有上下咬合資訊的 CT，將這些資訊轉到韓國 Mega Gen DDX 中心。幾天後寄來他們所設計好的資訊 (CAD)(Fig 8~12) 詢問我們的意見，25 植 Anyridge 3.5*10，植在 Subcrest 1mm; 26 植 Anyridge 4.5*8.5，植在 Subcrest 0.5mm 處，我們欣然接受。再過幾天，他們寄來做好的 Surgical Stent，Zirconia Abutment 和 PMMA Provision(CAM)(Fig 13.14)。


Fig 6


Fig 7

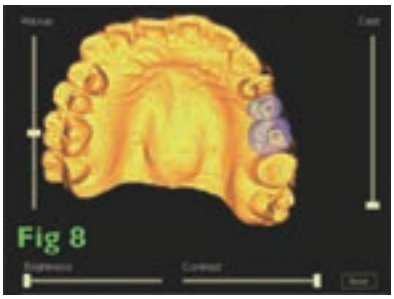


Fig 8

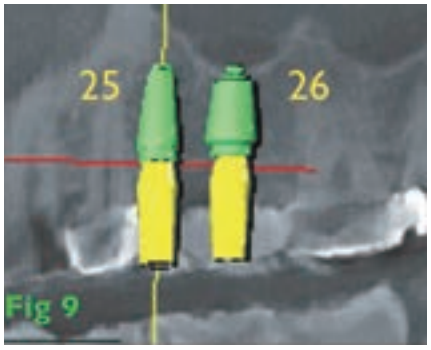


Fig 9

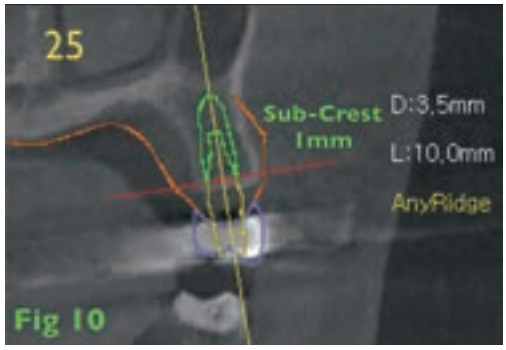


Fig 10

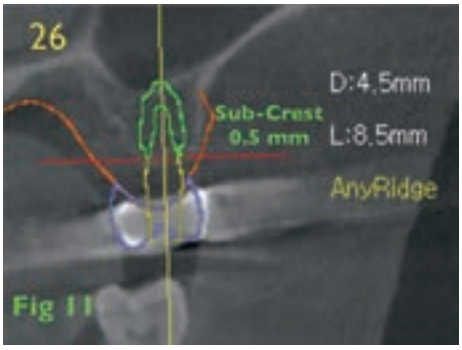


Fig 11

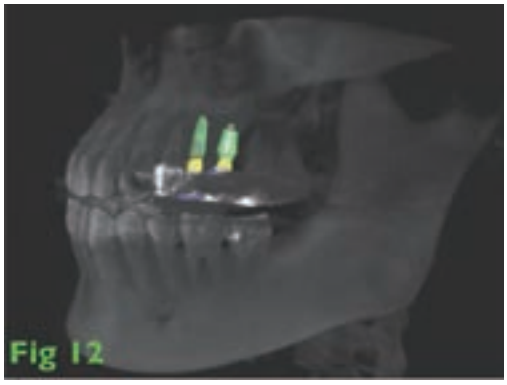


Fig 12

Fig 13

Fig 14

Surgical Stent 在欲植牙部分有兩個直徑約 5mm 的 Guide Channel 可以導引 Drill 在正確的方向，在上緣則有 Drill 的 Stopper Rest，以定位植入深度；Initial Drill 1805(Fig 15)，每支 Drill 均有一 Stopper，以和 Surgical Stent 做精準定位。當 Drill 往下鑽，Stopper 最後停在 Stent 的 Stopper Rest 上 (Fig 16.17)，Stopper 的厚度 1 mm 其下連著長約 7mm 的 Guide-Cylinder(Fig 15)，其直徑和 Guide-Channel 相仿，以保證單一方向，誤差角度降到最小；Stent 和 Drill 的此種設計省去了其它廠牌需有第三輔助引導裝置，算是一大創舉，用起來非常方便簡單。但由於 Stent 和 Drill 太吻合，為了達到良好的冷卻效果，在 Stent 的 Buccal side 另開了一道注水通道 (Water-Channel)(Fig 16.17)，以讓助理用 syringe 注水冷卻。

Fig 15

Fig 16

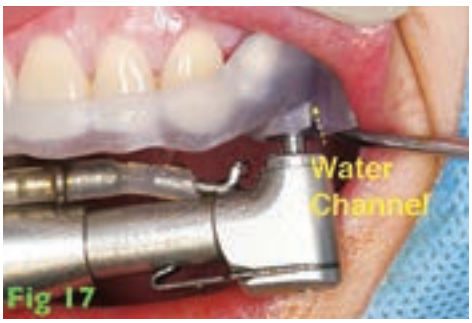
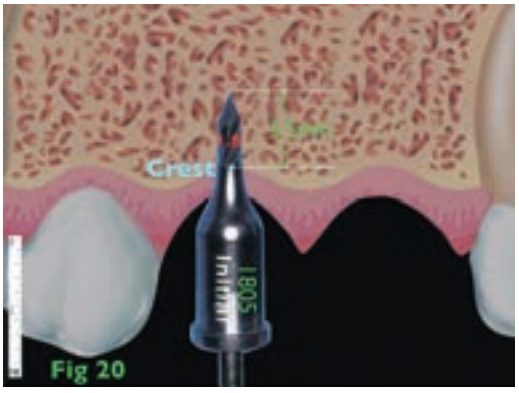
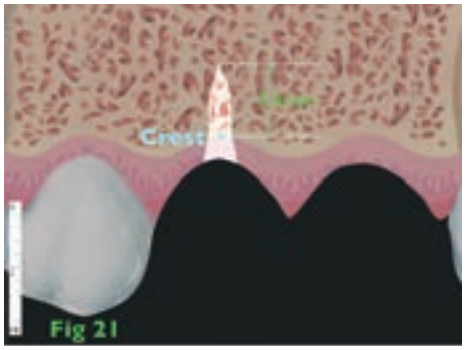
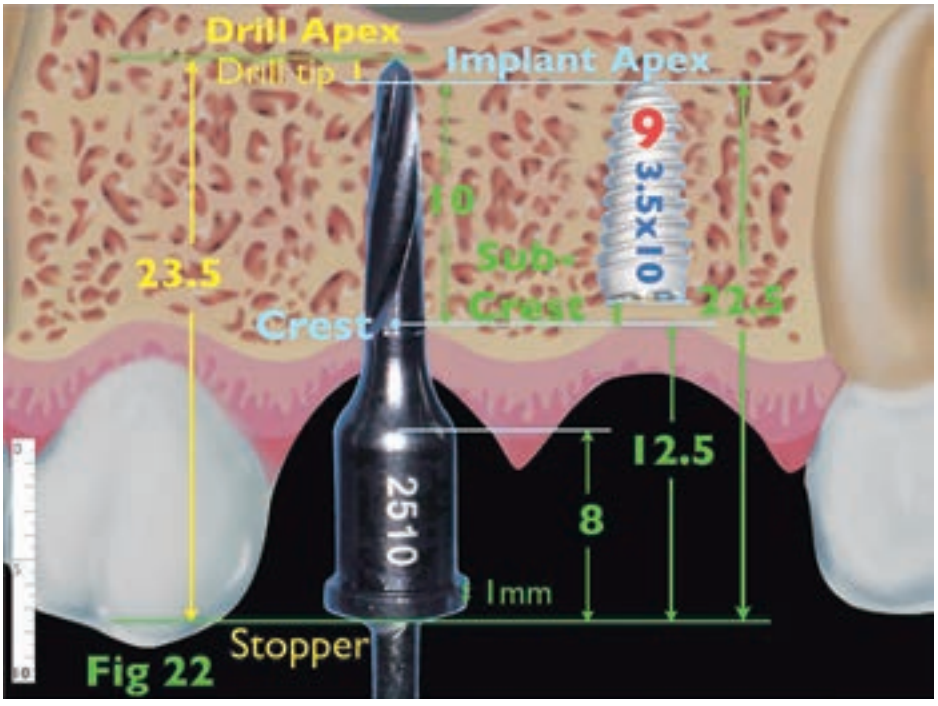


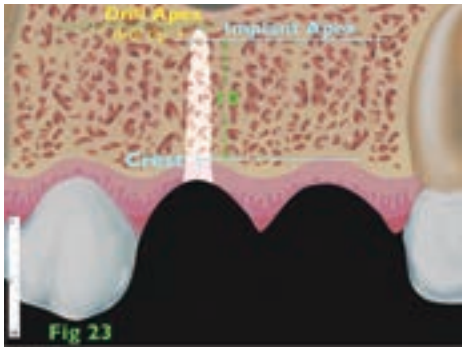
Fig 17

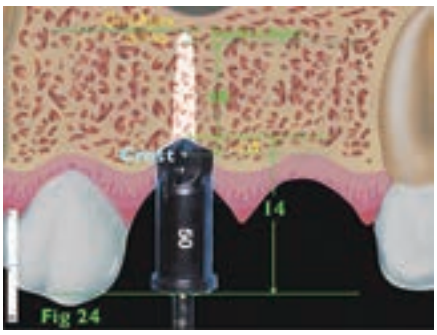
我們先做 25，(Fig 18) 原廠設計是植 Any Ridge 3.5*10，植入深度為 Sub-crest 1mm(Fig 10)，我們用 Drill 的順序見 (Fig 19)，先用 Initial Drill Prepare 出深約 Sub-crest 5.5mm、寬約 1.8mm 的 channel(Fig 20.21)，接著 2007、2008、2010、2508 依序 Prepare，最後是我們預設的 Final Drill 2510。所有的 Drill 從 Stopper 底部到 Drill Apex 長度均為 23.5mm(Fig 22)，Implant 3.5*10 實際長度只有 9 mm，但因植在 subcrest 1m，故從 Crest 到 Implant Apex 長度為 10mm，其中有 Drilltip 約 1mm 是多鑽出的，允許 Implant 再鎖深些 (約 0.5mm)。 而從 Crest 到 Stopper 底部長度為 12.5mm，Fig 23 為 drill 鑽出的 channel; 最後由於並未翻 Flap，因此 Ridge 的 contour 不清楚，最後用外徑 50 的 Ridge Contour Drill(Fig 24)，把 Irregular 的 Ridge 整平，如此放 Abutment 時才不會被卡到，才能鎖到底。這支 Drill 總長 14mm，有 1.5mm 鑽入 Bone(Fig24)，Fig 25 紅色箭頭指處的 Bone 被整掉，以利於 Abutment 的置入順利。若確信 Ridge 的 Contour 沒問題，這 Contour Drill 可以不必鑽到底。

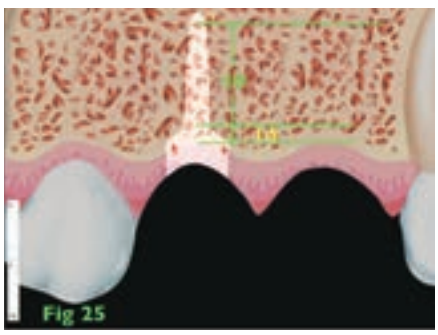




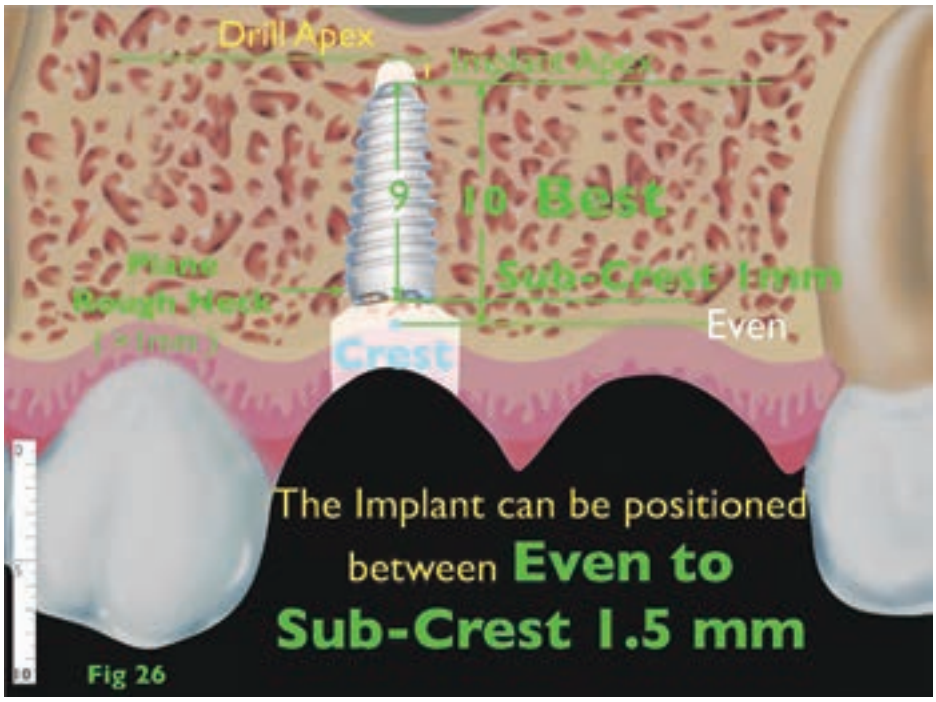


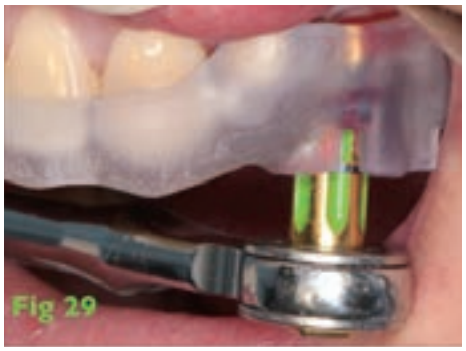


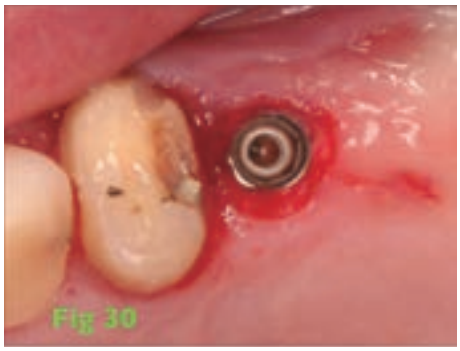




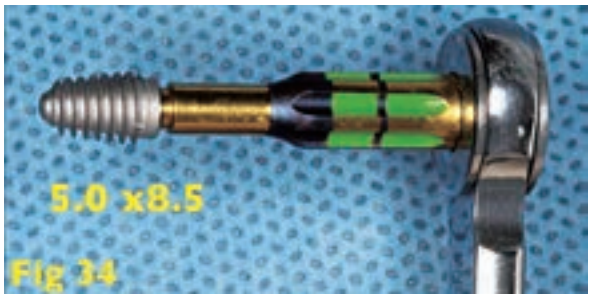
最後放入 Implant (Fig 26) sub-crest 1mm(原預定值)。這個案例由於 Bone 條件允許，我們最後選擇改植 Any Ridge 4.0*10(Fig 27)，在 sub-crest 1.5mm 時的手感 torque 較滿意，測得的 ISQ 是 72(Fig 31)。植入過程 (見 Fig 27～29) 先用 Handpiece，最後用 Ratchet Wrench 鎖到底，植完口內情況如 Fig 30。(可參考植牙大探索 2013 秋季號 P30)

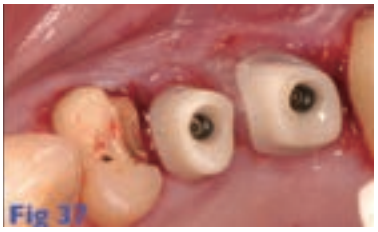


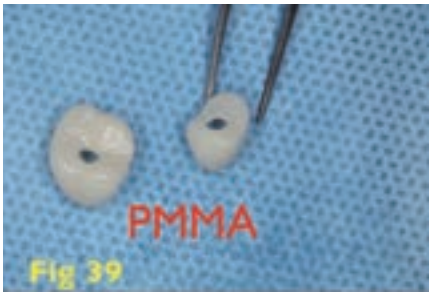




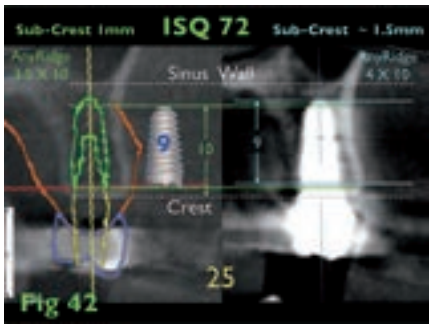
接著來植 26(Fig 32)，原先計劃植 Any Ridge 4.5*8.5，sub-crest 0.5mm，所用的 Drills 如 Fig 33，Try Fixture 時發覺 ISQ 不夠，立即換 5.0*8.5(Fig 34)，測 ISQ70(Fig 35)，還不錯的 Initial Stability，Fig 36 可見植入的兩支植體，裝上所附的 Zirconia Abutments(Fig 37,38)，再放入 PMMA Provisional Crowns(Fig 39,40,41)。



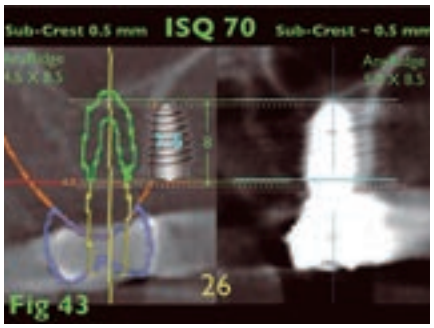




術後照 CT，並和原先治療計劃做 Superimposed，25(Fig 42)，Superimposed 在 Sinus Wall 下緣和 Buccal Crest(白色虛線)，原先計劃的 Fixture 放在兩條綠色線間。我們為了更高的 ISQ，植入位置在兩條淺藍色線間，深入約 0.5mm，sub-crest 1.5mm，ISQ 值 72，得失之間覺得還不錯。26(Fig 43)，Superimposed 在 Sinus Wall 下緣和 Buccal Crest(白色虛線)，預定植入位置 (綠色線間) 和實際植入位置 (淺藍色線間) 幾乎完全一致。這可能由於原先就設定植在 Sinus Wall 下緣，不準備做 Sinus Lift，因此 Sinus Wall 是一個絕佳的 Stopper，執行結果是滿分！一樣的，為了達到理想的 ISQ，我們選了大一號的植體，由原先的 4.5*8.5 改為 5.0*8.5，ISQ 值 70。



原先治療計畫

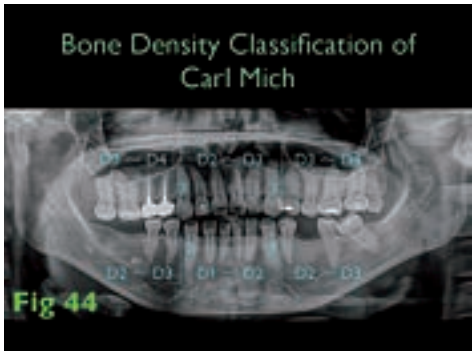


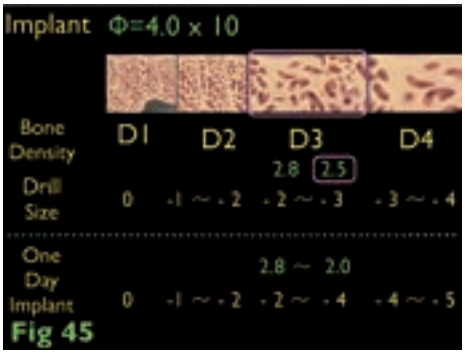
術後實際拍 CT 片

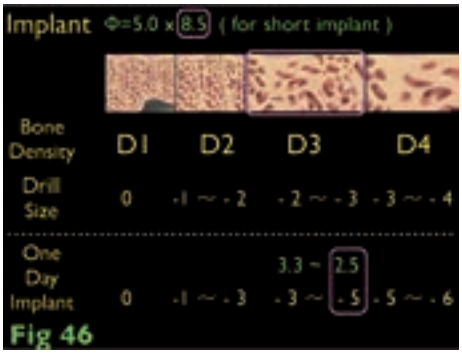
討論：

Carl Mich 依 Bone Density 把全口牙齒分成六區 (Fig 44)，上下顎都以犬齒當界標，上顎前牙區 (13~23) 的 Bone Density 大都屬於 D2~D3; 上顎後牙區則 D3~D4; 下顎前牙區 (33~43)D1~D2; 後牙區 D2~D3，這當然僅供參考，即使從 CT 上依灰階圖也很難精準判斷 Bone Density。在 Prepare 時的感覺或許準些，在鎖植體時的 Torque 值更準，ISQ 也是一個較佳的指標。在此提供一個我們在一般 Case 用 Drill 的參考基準 (Fig 45,46)：若 Bone Density 屬於 D1，則 Drill 用到和植體相對應的 size，若屬於 D2，則選擇小 1 到 2 號的 Drill; D3 則選小 2 到 3 號的 Drill; D4 選小 3 到 4 號的 Drill。這當然僅供參考，因即使同屬 D4，它的 Range 可說極大！

Mega Gen 提供 One Day Implant 的 Drills，尺寸依序：1.8、2.0、2.5、2.8、3.3、3.8、4.3、4.8、5.4、5.9，第一支植體最後選擇 4.0*10，Prepare 時覺得 Bone Density 屬於 D3。若依我們慣用的標準，小 2 到小 3 號的 Drill 為 2.5mm 到 2.8mm。這個 Case 我們的 Final Drill 為 2.5mm，但 sub-crest 1.5mm 比預定值深入 0.5mm，ISQ72。我們探討的結果是，在 One Day Implant 因沒翻開 Flap，看不清 Ridge Contour。因此為了 Abutment 置入精準，我們最後均用 5.0mm 的 Ridge Contour Drill 整平 Ridge，有可能降低部份 Stability。因此在 ODI case，D3 可能要選小 2 到小 4 號的 Drill。若覺 Bone 鬆軟，就選小 4 號。因此這個 Case 用到 2.0mm 的 Drill 就可。若選 2.5mm 為 Final Drill，不要鑽到底，鑽到一半即可。用在 26 的第二支植體選 5.0*8.5 我們則選用小 5 號的 Drill 2.5，原因是 26 更鬆軟 (屬於 D3-D4)，且植體只有 8.5mm，更短的植體，D3 可能要選小 3 到小 5 號的 Drill（參考 Fig 46)。







總結：

1.One Day Implant 的 CAD/CAM 在兩個案例的結果均非常精準。

2. 若技術純熟，ODI 至少可省下 一半的時間。

3. 患者的痛苦指數降低。

4. 由於有用 Ridge Contour Drill(Fig24) 整平 Proximal side 的 Ridge，因此 Stability 會降低，選用的 Final Drill 要比傳統再小一號到二號，或者 Final Drill 只鑽到上半部。

5.Ridge Contour Drill 可以不必下到底，特別在 Long span edentulous ridge，因 Bone contour 較 regular。

6. 最後 Case selection 很重要，條件好些的才鼓勵患者做 One Day Implant。

Important Number in Implant Dentistry

108.13 vs 32.63(day)

What is the criteria for decision of proper time for prosthetics?

Youn-Kang Jung, Sung-Koog Jung, Seung-Yeup Lee, Kwang-Bum Park

Daegu Mir dental hospital in Korea

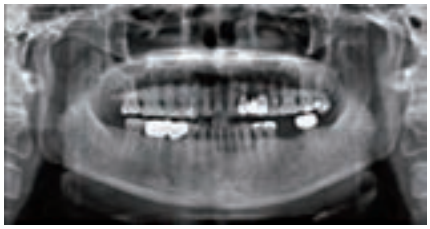
Introduction

For the long time, there has been a lot of controversies on when the possible time implants are to be loaded after placement. On average, general prosthetic procedure were recommended to start loading in 4 to 6 months in maxilla and 3 to 4 months in mandible after surgery, respectively. In most cases, we used to make the decision of proper time for prosthetics depending on clinician's feeling or radiographs. Recently, advanced implant surface treatment technology, implant designs and surgical placement technique for promoting initial stability would have enabled to reduce time for osseointegration but still no objective standards. The Implant Stability Quotient (ISQ) is a useful source that indicates the level of stability and osseointegration in dental implants. This is measured by special instruments using RFA (Resonance Frequency Analysis) technique and ranges from 1 to 100. The acceptable stability range lies between 55-85 ISQ[1]. The overall average ISQ value of all implants over time is approximately 70[2]. A significant decrease in ISQ indicates a potential problem and should be considered an early warning [3]. In this study, we investigated that the survival rates of Anyridge implant with deep and knife thread, which ISQ value is more than 70 right after surgery or treated Xpeed surface treatment in 25 cases of healed ridge after loading 1 year.

Materials & Methods

The retrospective study group was comprised of 50 implants treated in Daegu Mir dental hospital between May 2012 and April 2013. The control groups were composed of 25 AnyRidge implants (without ISQ value)(MegaGen Co., Korea)were placed between May 2012 and August 2012 (12 male/13 female, mean age 62~72) and the test groups were 25 AnyRidge implants (7 male/18 female, mean age 59~92) treated with Xpeed surface (using ISQ) between November 2012 and April 2013. In test groups, ISO value were measured from implant placement to delivery of prosthetics every week. If the ISQ value which measured right after surgery was under 70, that was excluded from research. And if the ISQ value continue to decrease under 70 during follow up period, that was also not be selected.

Case Report



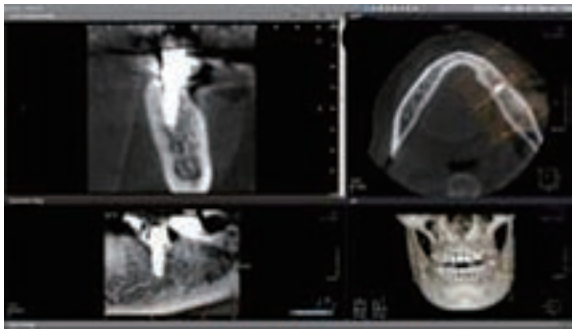
pre-operative panoramic view

pre-operative photograph

Surgical stent & custmozicd zirconia
Abutment& PMMA PR

flapless surgery using R2 stent (MegaGen Co,. Korea)

Implant Stability Quotient (ISO) by OSTELL



post-operative CT view

post-operative panoramic view

Customized Zirconia abutment was
placed right afert surgery

Provisional restoration made by PMMA

Final restoration using monolithic full
zirconia crown

Results

25 implants in control group showed the average 108.13 day from implant placement to delivery of prosthetics. At this time, we made the decision of proper time for prosthetics depending on radiographs, experiences and recommendation. Compared to this, the test group showed the average 32.63 day (67.89 day without immediate loading) from implant placement to delivery of prosthetics. The ISQ value was measured every week right after surgery. In test groups, the mean ISQ value was 76 in buccal side and 76 in lingual side respectively. There were no failure on both side.

Table 1. average periods from implant placement to delivery of prosthetics and ISQ value.

	The day between failure insertion and abutment insertion	Mein ISQ value (Failure insertion)
without ISO	108.13 day	
with ISO	32.63 day 67.89 day (without immediate loading)	76(B) 76(L)

Table 2.

	Control group (without ISQ, total 25)	Test group (with ISQ, total 25)
Male I Female	12/13 (0.923)	7/18 (0.388)
Flapless I Non flapless	6/19 (0.315)	5/20 (0.25)
Immediate loading / Non immediate loading	4121	15110
Failure	0	0

In the past, we made the decision of proper time for prosthetics depending on radiographs, experiences and recommendation. Recently, many studies have been reported that the ISQ value provide objective data about stability of implant and is effective for decision of loading time. Resonance frequency analysis stability measurements essentially apply a bending load, which mimics the clinical load and direction and provides in formation about the stiffness of the implant-bone junction. Other techniques, such as the Periotest also aim to provide an objective measure of implant stability and osseointegration that is noninvasive and does not damage the implant-tissue interface.

Actually, higher ISQ value measured right after surgery doesn't mean that the osseointegration is completed. A cumulative survival rate was 100%. More studies with larger patient numbers needed to make the decision of proper time for prosthetics completely evidence based. Despite more research needed, in this research, it seemed that ISQ value is more effective for clinicians to determine when is the possible time implants to be loaded after placement.

References

1.Sennerby L, Meredith N. Implant stability measurements using resonance frequency analysis: biological and biomechanical aspects and clinical implications. Periodontology. 2000, 2008

2.Sennerby L, Meredith N. Implant stability measurements using resonance frequency analysis: biological and biomechanical aspects and clinical implications. Periodontology. 2000, 2008

3.Glauser R, Lundgren AK, Gottlow J, Sennerby L, Portmann N, Ruhstaller P, Hammerle CH. Immediate occlusal loading of Branemark TiUnite implants placed predominantly in soft bone: 1-year results of a prospective clinical study. Clin Implant Dent Relat Res. 2003;5 Suppl 1:47–56

即拔即種即受力—AnyRidge 的使用心得

植牙走到現在，由於部分牙醫師的吹噓加上病人的期待—希望馬上有假牙可以用、可以看，在『輸人不輸陣』的壓力下，牙醫師們就必須踏遍武林，學盡武功，看看哪家門派的術式或哪家廠商設計的植體可以讓 P't 快速裝上假牙，而且慢慢的，這種趨勢似乎也快變成主流！

當然也不是所有的 case 都可以即拔即種即受力，所以篩選病人相對很重要，另外更重要的是要把正確觀念教給病人，讓病人了解即時受力是有條件的，不是所有情況都可以，而且咬合初期不可太使力，盡量小心使用，不可以大口扒飯，大口吃肉！

郭茂寅 醫師

台北醫學院畢業
順泰牙齒診所主治醫師
宜蘭縣北醫校友會會長
宜蘭縣牙醫師公會理事長暨學術主委
中華民國臨床植牙醫學會專科醫師
中華民國臨床植牙醫學會理事
歐洲Sola鐳射醫學會安全官
世界臨床鐳射醫學會專科醫師

早期在做即時受力時，最常依據的準則就是：

1. 選擇 Dense bone
2.High insertion torgue
3.Multiple implants
4. 避開 ext. socket.

慢慢的由於 P't 要求，連 D4 bone 或拔牙區，也要即時受力，當時壓力是很大的，所以勸退病人是常有的事，要不然就是選擇跟條件好的 implants 連在一起，或是利用現有的自然牙做臨時假牙。

現在，很不錯的，MegaGen 出了 AnyRidge system 似乎讓以前的擔心減少許多一或許以後就不必再勸退病人了！

基本上即時受力是有風險的，因此 AnyRidge system 設計了獨特的螺旋結構，好讓植體與骨頭能夠緊密結合，另外又加入 ISQ 值的佐證，讓臨床醫師更安心使用。

ISQ： Implant Stability Quotient —植體穩定度數值

它是利用聲波反射原理，測出頻率高低來決定數值，決定植體穩定度—頻率越高，穩定度越好。

實際上到目前為止，沒有任何一種儀器可以精確得測出植體穩定度，因為沒有那麼小的 sensor 可以擺在植體與 bone 之間，況且咬合是動態的，而 ISQ 是測 micromobility of implant (in bone)，是靜態的。

當牙齒咬在植體上時，產生的移動叫 micromotion

micromotion = micromobility × load

這就是 ISQ 值有陷阱的地方，而且這個 load 有多大你永遠不知道，方向如何也無法預測，還好在這五年來除了 peri-implantitis 及 over load 造成 implant fracture 之外， ISQ 值一直是我的參考依據。

在沒有更精密儀器出來之前 ISQ 是相對可以信賴的。

另外一個即時受力有風險的原因就在於 mechanical force 和 biomechanical force 不同。

當植體植入骨頭時，它的 initial stability (primary stability) 來自於 mechanical force，就如同拿一根螺絲釘鎖入木板一樣，這時如果你要掛一幅圖畫，就必須考慮掛圖的重量，如果重量太重 (over load)，螺絲就會掉下來，植體也是一樣，初期的咬合力量不能太大，這是要跟病人說明的。

等到植入植體超過 6 個月，已經骨整合了，此時的 2nd Stability 來自於 Bioforce ＋ mechanical force。Bioforce 是軟力，mechanical force 是硬力，因此這時候的力量是軟中帶硬，硬中帶軟，像打太極一樣。如果各位有機會在 D3 Bone 拔植體就知道，要拔它還真是不容易！

以下是我為了安全所定下的幾個即時受力的準則：

1. High ISQ
2. Multiple implants
3. lower anterior
4. Bone intact
5. Implant system seletion
6. primary occlusion — mild
7. P't good condition & good cooperation

綜合以上越多點就越安全

Case 分享：

張先生、男性、82 歲、身體硬朗、無抽菸、檳榔習慣

口內發現：3××6鬆脫　3牙冠斷裂

P't 聽從他太太建議，接受植牙治療，病人要求要即時假牙咀嚼，也答應我們要求一不要吃太硬的食物。

治療計畫包括：

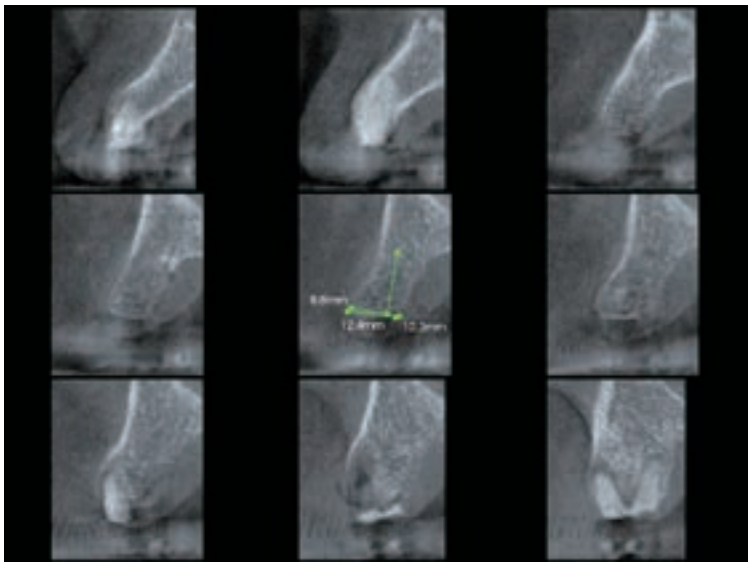
24、 25 植牙，26 即拔即種，23 牙冠增長，且裝上臨時假牙

術前口內觀 (26 已拔除) 102.11.20

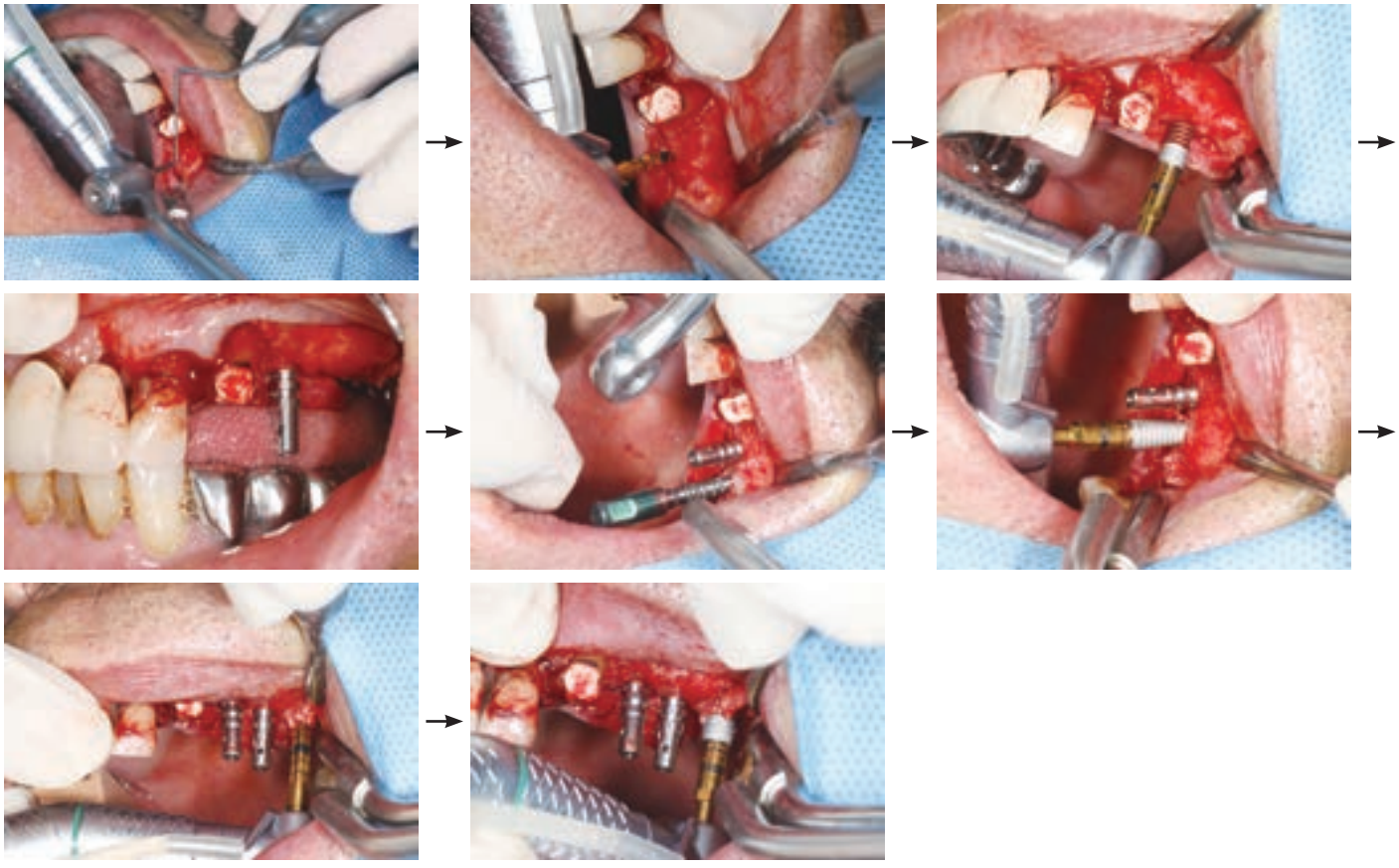
齦瓣翻開 26 骨缺損

水鐳射去除肉芽組織

23 牙冠增長術 (Er-YAG laser)



25.26 從斷層 C.T 看出骨頭情況還可以，很快的植入 Any Ridge 3.5×11.5mm 兩支，至於 26 位置，在 3D 上看到三個根分的很開，我們選擇從三根中間植入 (現拔現植) Any Ridge4.0×10mm，同時補骨粉。



植入當天 (102.11.20) 測得 ISQ 值分別為：

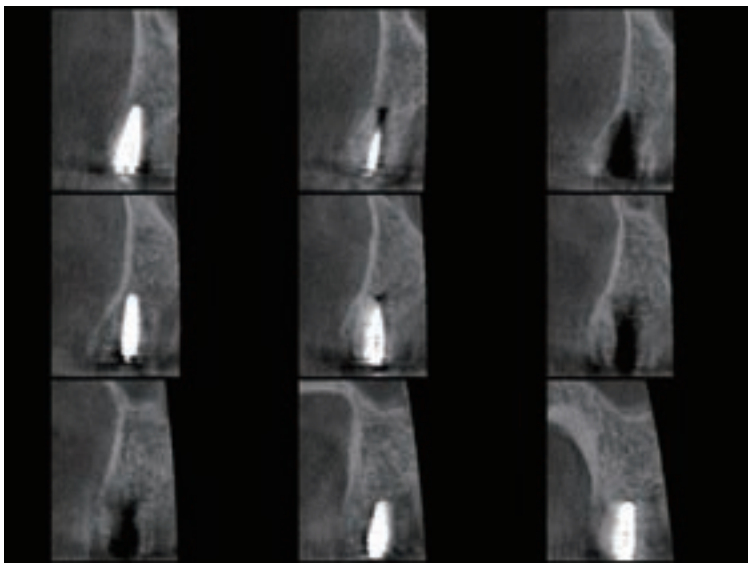
24 < BL：77 / MD：77　25 < BL：75 / MD：75　26 < BL：76 / MD：76

24 植入當天 ISQ 值

25 植入當天 ISQ 值

26 植入當天 ISQ 值

然後 G.B.R.& Sutures & provisionals



植完牙當天的電腦 3D 圖

四個半月後 (103.04.10) 測得 ISQ 值分別為：

24 < BL：77 / MD：78　25 < BL：78 / MD：78　26 < BL：74 / MD：76

與剛植入時 ISQ 值變化不大，表示骨頭狀態很穩定 , 於是裝上支台齒及最終假牙：

討論：

即拔即種即受力在臨床上是很大的挑戰，也是目前很夯的主題。至於怎樣做的安心，做的輕鬆，我想每位醫師都有心中一把尺，在這裡我把近幾年來即拔即種即受力的臨床心得總結如下以供參考：

1. 高 ISQ 值
2. 連結多顆植牙
3. 下顎前牙區最好
4. 植牙區骨頭完整
5. 植牙系統的選擇
6. 初期咬合— 輕、慢
7. 病人身體情況佳、配合度好

Case 的選擇能夠包含以上愈多項愈好，可預期的成功率也愈高。

Lateral approach

MILA kit™ [REV.01]

(MegaGen Implant Lateral Approach Kit)

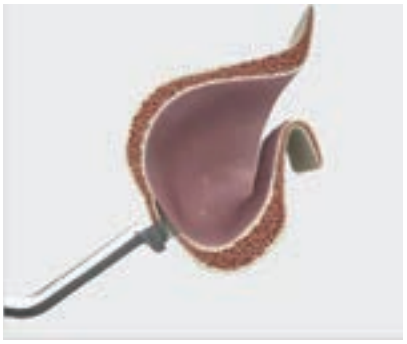
Drill safely with confidence!

Ref.C KLSCN3000

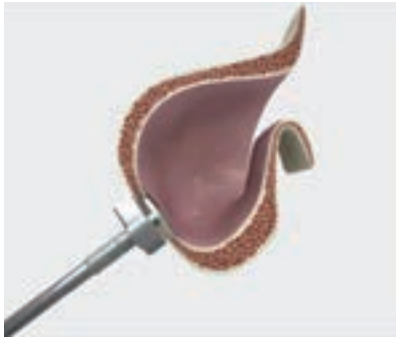
How to use -Lateral approach

Idenlifyt the position to dril accurately using Point Trephine bur.

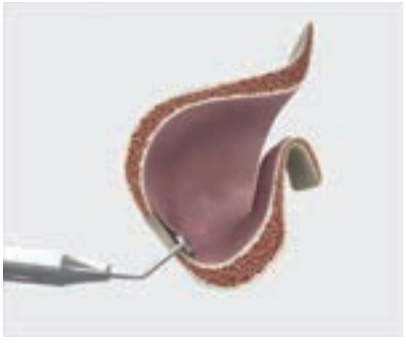
ChooseTrephine depend-ing on the thickness of the remaining bone and drill again over the hole made by Polnt Trephlne bur.



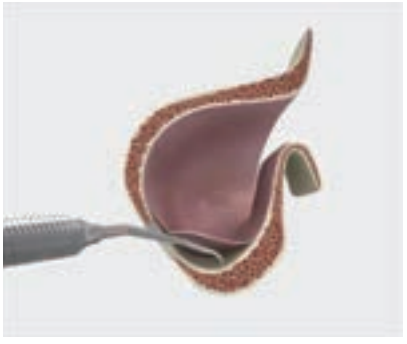
Use Window Opener to fracture and remove the window wall.



Complelety remove the remaining window wall with Express Bur.



Use Elevator 001 through the hole perform the first membrane lift.



Use Elevator 002 to lift the membrane further.

Graft autogenous bone collected or alloplastic mateml.

Close the window wall

Suture

1. Point Trephine Bur | Scale 2:1

Diameter (D)	Length (mm)	Ref.C
Ø7.5	0.5	TLSTBU6705

2. Lateral Trephine Bur | Scale 2:1

Diameter (D)	Length (mm)	Ref.C
Ø7.5	1	TLSTBU6710
Ø7.5	1.5	TLSTBU6715

3. Window Opener | Scale 2:1

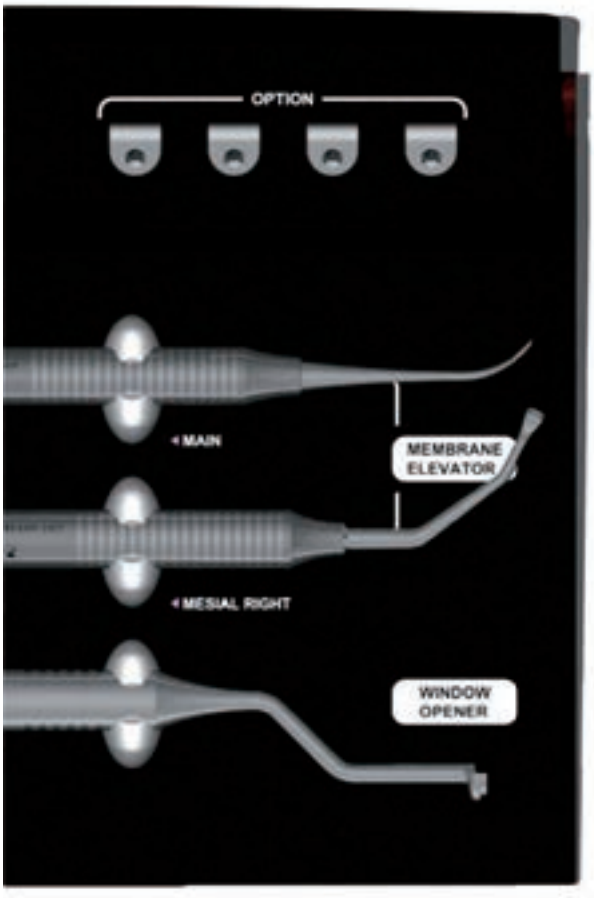
Diameter (D)	Length (mm)	Ref.C
Ø7.5	1.7	TLSWO6710

4. Express Bur | Scale 2:1

Diameter (D)	Length (mm)	Ref.C
Ø7.0	2/4/5/6/8/10 Marking	EB70

5. Membrane Elevator | Scale 1:1

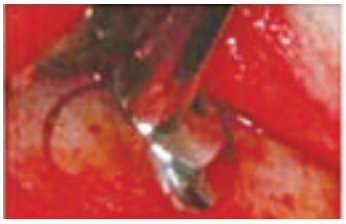
Diameter (D)	Length (mm)	Ref.C
Ø7.0, 3	-	TLSME001
2.8	-	TLSME002



Clinical case

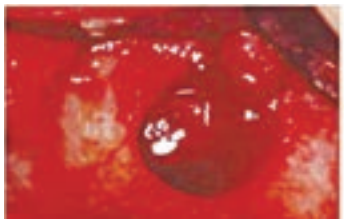
Trephine with 1mm external stopper

Point Trephine Bur : Initial drill



"Window Opener" to detach window wall

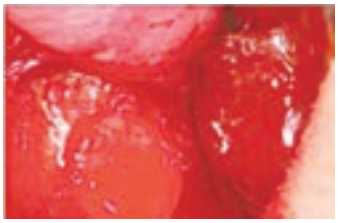
Window Opener : Remove the wall



Elevator : Lift membrane

Completely remove the remaining window wall with Express Bur

Graft : autogenous bone collected or alloplastic material

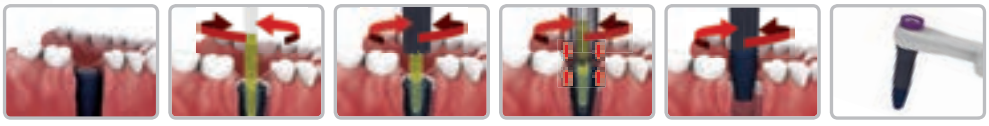


Previously detached window wall is tapped into the position to prevent soft tissue migration into the sinus bone grafting

911kit

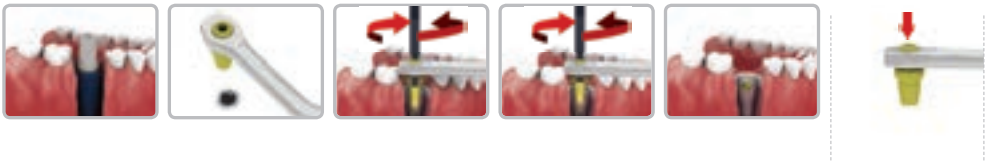
四大主要功能完整滿足臨床案例需求

Fixture Capture



Abutment Solver

Screw Solver



Hex Solver

昇基事業股份有限公司
SUNRISER MEDICAL CO., LTD www.sunriser.com.tw
台北市忠孝東路五段815號12樓 TEL:02-27881335 FAX:02-27882885
台中市西屯區工業區一路12號2樓 TEL:04-23551359 FAX:02-27882885
高雄市前鎮區中山二路2號19樓之5 TEL:07- 9511335 FAX:07- 9501335

T-PLUS
Dental Implant

Ti-Star
Implant System
台灣植體最大品牌

賀

Ti-Star通過美國聯邦 FDA (認證證號：K132992)
CE、CFDA等國際及台灣嚴格認證，卓越醫療品質，
讓您使用更安心。

世紀植體新5利

1、超細螺紋設計，密合度更高，能有效強化咬合力。
2、Pitch加深50%，表面積增大，可提高初期穩定度。
3、螺紋旋切設計，可降低阻力，減少手術植入時間。
4、1.2mm collar，超完美力學，可增加咬合承受力。
5、8°Morse Taper，分散骨受力，可確實減少骨流失。

昇基事業股份有限公司
SUNRISER MEDICAL CO., LTD www.sunriser.com.tw
台北市忠孝東路五段815號12樓 TEL:02-27881335 FAX:02-27882885
台中市西屯區工業區一路12號2樓 TEL:04-23551359 FAX:02-27882885
高雄市前鎮區中山二路2號19樓之5 TEL:07- 9511335 FAX:07- 9501335