

Issue 003 | Aug 2022

 DENTAL
DIARIES

Lifestyle

Wine: Such a Wonderful Thing to Waste!

Wine & Dine

A Safe, Predictable and Efficient
Way to Create a Lateral Window
during Sinus Floor Elevation

QUARTERLY
MAGAZINE

HONG KONG & MACAU EDITION

2022

Can Overload Damage Your Implants?

New Insights In An Old Discussion!

ITI NEWS

An Updated Literature Review on

Accelerated Orthodontic

with Relevant Cases Report

Clinic Start-up Package

*TAKE A BREAK
SIT BACK
RELAX*

Practicing dentistry at the highest standards today is a challenge. As dentists we have to stay on top of a rapidly changing science, decide among growing technological innovations and new products and serve patients with ever changing needs and expectations. All these, while striving to maintain work-life balance in difficult times for all can be tough and it is no surprise that dentistry is among the most stressful professions.

At the Dental Diaries, we aspire to support dentists of Hong Kong and Macau on every step. Every quarter, our editorial team will gather the most up-to-date news in the dental field, short scientific articles and case studies, together with lifestyle information, suggestions and ideas to balance a busy working life with some fulfilling personal time. We also want to foster a network, by sharing messages, news and classified ads for the local dental community.

We hope that every time you receive the latest Dental Diaries, you will not only gain professional knowledge, but it would also make your break a little bit more relaxing!

“
**What is
Dental Diaries?**
”



CONTENT

TABLE OF

04	ITI NEWS
05	UPCOMING COURSES & ACTIVITIES
08	INDUSTRY NEWS
09	MAIN STORY <i>Can Overload Damage Your Implants? New Insights In An Old Discussion!</i>
14	CASE STUDY I <i>Modified All-On-4 Zygomatic Implant Functional Reconstruction of Maxillectomy Defect: from Mid-facial Degloving <Scarless> Resection to Immediate Implant <Graftless> Rehabilitation</i>
18	LIFESTYLE <i>Wine: Such a Wonderful Thing to Waste!</i>
20	CLINIC START-UP PACKAGE <i>ClinicEZ Package</i>
22	LIFESTYLE <i>Wine & Dine</i>
25	CASE STUDY II <i>A Safe, Predictable and Efficient Way to Create a Lateral Window during Sinus Floor Elevation</i>
31	CASE STUDY III <i>An Updated Literature Review on Accelerated Orthodontic with Relevant Cases Report</i>
36	CASE STUDY IV <i>Reconstructive Surgical Therapy Of A Peri-implantitis Related Intrabony Defect</i>
39	DENTAL COMMUNITY BOARD

Grow your practice!

After two difficult years for all, ITI is growing explosively all over the world and Hong Kong is again in the forefront! Last April, in the ITI Campus Hong Kong we got together a team from all over the world to welcome our more than 50 new members and update everyone on the exciting new developments!

The evening had a little bit of everything! It started with a special greeting from our President, Dr. Charlotte Stilwell, a Dane, specialist prosthodontist practicing in London who is looking forward to visiting us in Hong Kong at nearest opportunity. Then Dr. Alexander Ochsner, our Swiss CEO took the spotlight to present the latest developments in the ITI and our strategic directions. With strong local teams all over the world, ITI is an international heavyweight and currently the largest network of professionals in Implant Dentistry. Not that we cannot be even larger however, with the bar set to reach 50,000 members within the coming years! Dr. Ochsner is no stranger to Hong Kong, as he spent many years based in Singapore, from where he visited and collaborated with colleagues in Hong Kong very frequently. The final greeting was from another old friend, Professor NP Lang, who was one of the founding fathers of ITI in Hong Kong, when he chose the city to set his base about 15 years ago, started a postgraduate program in Implant Dentistry at HKU and founded the ITI Centre of Excellence. He spoke about the importance of ITI philosophy in times where market pressure might make colleagues likely to compromise decisions and he didn't hesitate to say what he misses the most from Hong Kong: its people and all the friendships he was blessed to have with the colleagues who embraced and helped him!



Science was in the focus after that, with Professor Dean Morton from the University of Indiana, a world acclaimed prosthodontist taking the podium. He summarized for us the main points of a larger session from the ITI Congress in Rome, where with Dr. Valdemar Polido they presented the tools and strategies to minimize aesthetic risks in implant dentistry.

The evening concluded with some "straight from the heart" confessions about their own paths in ITI and implant dentistry, by our long serving fellows Drs. Francis Chan, Bosco Wong, Corrie Ng and Gerald Siu.

The highlight surprise that followed was some great news for dentists in Hong Kong, namely our new study clubs and the upcoming ITI Curriculum!



> Learn More



Dr. Charlotte Stilwell



Prof. NP Lang



Dr. Bosco Wong



Dr. Gerald Siu



Dr. Corrie Ng



Dr. Francis Chan



Mr. Alexander
Ochsner



Dr. Dean Morton

UPCOMING COURSES & ACTIVITIES

You'll Never Drill Alone

ITI Study Club HK Meeting

*Exclusive for ITI Study Club Members



Dr. Cheung Chi Hang, Alex
Study Club Directors



Dr. Hui Sheung Yu, Bosco
Study Club Directors



Dr. Leung Chung Yin, Simon
Guest Speaker

Welcome On Board: Digital Era of Implant Dentistry



15th July 2022 | 7:30 P.M. - 9:30 P.M.



HUE Dining



Fee: Free of Charge
for ITI SC Members

The Myth of Maxillary Sinus And Implant Placement Techniques



22nd Sep 2022 | 7:30 P.M. - 9:30 P.M.



Restaurant address
will be announced soon



Fee: Free of Charge
for ITI SC Members

The Key to Longevity of Implant Prosthesis

Guest Speaker: Dr. Leung Chung Yin, Simon



24th Nov 2022 | 7:30 P.M. - 9:30 P.M.



Restaurant address
will be announced soon



Fee: Free of Charge
for ITI SC Members

Nothing To Prove

ITI Study Club HK Meeting

*Exclusive for ITI Study Club Members



Dr. Tang Chun Lok, Ernest
Study Club Directors



About Preference: Do Your Choices Shape Your Practice?



29th July 2022 | 7:30 P.M. - 9:30 P.M.



Casa Cucina & Bar



Fee: Free of Charge
for ITI SC Members

Choices: Why Choose an Implant System in Practice?



26th Aug 2022 | 7:30 P.M. - 9:30 P.M.



Restaurant address
will be announced soon



Fee: Free of Charge
for ITI SC Members

Webinar

CME x 6pts



MODERN
Dental Laboratory

Digital Dentistry Series

Date Aug - Sept 2022

Bundle Offer HK\$450 for 4 x Webinars (Original Price: HK\$500)



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Speaker:



Dr. Kenneth Luk



Dr. Robert B. Kerstein



Dr. Annie Wan



Prof. Francesco Mangano



Dr. Henriette Lerner



T Scan in General Dental Practice

Dr Kenneth Luk | Dr. Robert B. Kerstein



12nd Aug 2022 | 07:30 P.M. - 9:00 P.M



Fee: \$ 100 HKD



Learn More



Temporomandibular Disorder in Daily Practice

Dr. Wan Kong Yuk, Annie



22nd Aug 2022 | 07:30 P.M. - 9:00 P.M



Fee: \$ 100 HKD



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Full Arch Implant Impression with Intraoral Scanners: The Keys To Success

Prof. Francesco Mangano



12nd Sep 2022 | 07:30 P.M. - 9:00 P.M



Fee: \$ 150 HKD



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Artificial Intelligence Empowering Digital Dental Technologies

Dr. Henriette Lerner



19th Sep 2022 | 07:30 P.M. - 9:00 P.M



Fee: \$ 150 HKD



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ENQUIRIES: +(852) 8481 1770

Webinar



What is the Science behind Aligner Attachments/Engagers?

Prof. Dr. James Mah



3rd Aug 2022 | 10:30 A.M.



Fee: Free of Charge



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Webinar



The Use of Customized Abutment for Implant Restoration

Dr. Pua Hong Ping



7th Sep 2022 | 07:30 P.M.



Fee: Free of Charge



Learn More

Live + Hands-on



Complete Denture from Impossible to Achievable & Essential

Dr. Wan Kong Yuk, Annie



2nd & 9th Sep 2022 | 09:30 A.M. - 06:00 P.M.



Fee: \$ 8,500 HKD



MODERN
Dental Laboratory



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Webinar



Every Laboratory is different -Efficient Digital Workflows for the Profitable Dental Laboratory Business

Alexander Wunsche



14th Sep 2022 | 07:00 A.M.



Fee: Free of Charge



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Webinar



Advancements in Implant Dentistry Utilizing Digital Planning and Contemporary Biological Concepts to Ensure Long Term Peri-implant Tissue Stability

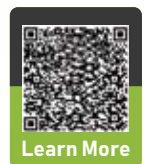
Dr. Ryan Lewis



12nd Oct 2022 | 07:00 A.M.



Fee: Free of Charge



Learn More

08

阻塞性 睡眠窒息症

睡眠窒息症 和 鼻鼾 造成的影響

- 白天嗜睡和疲勞
- 胃灼熱 / 胃酸倒流
- 陽痿 / 性慾下降
- 焦慮及抑鬱
- 記憶及認知力減退
- 頭痛
- 磨牙症
- 心臟問題
- 鼻鼾
- 增加中風病風險
- 高血壓
- 糖尿病 II 型
- 職場與車輛事故
- 夜尿

如果你有上述任何情況，請確認後向你的牙醫陳述

如何治療睡眠窒息症和鼻鼾

以下三種由現代牙科製造的防鼾器可能適合你：

- FDA Cleared FDA 批准
- Maximum Space for Tongue 最大的舌頭躍動空間

摩氏輕型
Moses® Elite



靜斯
Serene Silensor



- Thin and Elastic 薄而有彈性

依瑪
EMA®



- Upper and lower members are not bound to each other 上下顎配件方便配戴
- "Vertical component" Design 垂直元素設計

How Penicillin Allergy Affects Successful Surgery

Patients with a penicillin allergy are more likely to fail to receive dental implants. To understand the outcomes of taking different antibiotics, NYU College of Dentistry researchers reviewed 838 patients who received dental implants. All patients without a penicillin allergy were given amoxicillin, while those who reported an allergy were given alternative antibiotics.

Researchers found that dental implants failed in 17.1% of patients with penicillin allergies, compared with 8.4% of those without allergies. And patients who took certain antibiotics other than amoxicillin were much less likely to have successful dental implants.

Researchers say it is unknown why dental implants failed in patients with a penicillin allergy. However, penicillin allergies are overreported according to the research. 90% of people who say they have penicillin allergies are not truly allergic to penicillin after testing. As a result, doctors recommend testing patients who report an allergy to penicillin to confirm the allergy.

Dental Industry News

AI-based Web Tool for Prediction of Patients' Oral Cancer Risk

Oral cancer often develops from white patches - oral leucoplakia (OL) and oral lichenoid mucositis (OLM). These patches may appear long before a diagnosis of oral cancer. However, it is challenging to predict which lesions will develop into oral cancers as the global risk rates of progression from OL/OLM to cancer vary from 0.4 to 40.8%.

Researchers from the University of Hong Kong; Queen Mary Hospital; and James Cook University

collaborated to develop a free web platform, DeepSurv, that can be applied to automatically generate an individualized prediction of the risk of oral cavity cancer occurrence in those with OL/OLM for up to 20 years following diagnosis.

"While the web tool has been found promising based on our validation exercises, users should know that it is still primarily a research-based tool and requires further prospective optimization," said Dr Richard Su, Clinical Associate Professor in OMFS, Faculty of Dentistry, HKU.

Global Dental Tourism Market

Approximately US\$6.7 billion is expected to be generated by the global dental tourism market in 2022. The rapid adoption of technologically advanced medical equipment in emerging economies will drive the market's growth, possible to reach a market size of over US\$20 billion in 10 years.

The dental treatment cost in some developing countries is relatively low. And at the same time, medical visas for such procedures can be obtained relatively quickly and easily, enabling the flow of patients to foreign countries for treatment.

"Rising adoption of technologically advanced medical equipment in emerging economies, along with increasing government-backed investments in the development of the healthcare infrastructure in these countries is expected to drive the market in the forthcoming years," says an FMI analyst.

Can Overload Damage Your Implants? New Insights In An Old Discussion!

MAIN STORY

“Overload” has been suspected as a cause of complications and failures since the early days of implant dentistry. Opinions shifted back and forth through the years, heated arguments rose for and against, but solid evidence has been elusive. Current evidence suggests some damaging effects from excessive or adverse loading, although it appears to be different to what was initially anticipated. Problems due to loading are manifested rarely through the peri-implant bone, but more frequently on the mechanical implant components. Very often however, what we see as “overloading” failures are connected with some design flaws or deficiencies. To separate fact from myth and more importantly to see how we can prevent such problems, join Drs. Mattheos and Janda, a “complications dream-team” in these exclusive articles in two parts!

What is overloading?

Every mechanical construction which is intended to bear load or withstand forces, can be overloaded, when the forces it is being subjected to exceed a certain threshold. Biological and Biomechanical systems are no exception to this, so it comes as no surprise that “overloading” has been since long suspected as a cause of complications and failures in implant dentistry. At the same time, with dental implants being a complex system of human tissue, mechanical components and bacteria ⁽¹⁾, defining overloading in clinically relevant terms has been elusive, as much as studying its actual impact and consequences.

When dealing with an ill-defined problem, it is always a good start to break it down to all its fundamental components. On the side of function, we have the occlusal forces, which are measured in Newton. We can assume that these forces can be deemed “excessive loading”, if surpassing a certain threshold. Other than the actual value in Newton, other parameters of a force could be very important, such as frequency and direction, which could also be detrimental if different to what the system is designed to withstand. Such parameters can be described as “adverse loading” and could appear in conditions such as bruxism and parafunctions.



Dr. Nikos Mattheos



Dr. Martin Janda

On the implant side, the recipient of the forces is a complex biomechanical system. This system includes different components of the implant-abutment-prosthesis complex, with material combinations, different designs and specifications. These components are integrated in or supported by living human tissue, mineralised and non-mineralised, which can be healthy or present with a wide range of pathological conditions such as osteopenia or osteoporosis. Not to forget the constant presence of biofilm in this system, which can significantly influence the condition of the peri-implant tissue but also can affect under circumstances the mechanical components.

Given this complexity, the question to formulate is “Can excessive or adverse loading affect the success of dental implants and in what ways?” The answer could be complex.

Already at the start we have to admit that we enter a challenging puzzle, as the focus question is compromised by the fact that there is very little to help us define what is “excessive” for the complex biomechanical system of a dental implant. Biting forces can vary extremely between individuals. Even more, ethnicity, gender and age can further influence the extent of mastication forces ^(2,3). Consequently, the margins of “adverse” are very difficult to define for a living tissue as bone, which has evolved to adopt its very architecture to the actual stimuli of functional forces. All we can do is take a critical look at the current evidence, having to accept that only some aspects of this equation can be comprehended, while other might remain elusive, at least until more evidence is available. Although it is a fact that implant mechanical components and the tissue are closely interrelated, for the purpose of reviewing the literature we might have to approach them independently.

Mechanical forces and bone

Bone is a living tissue which has evolved not only to withstand functional load, but also to constantly change its actual architecture to better respond to this load. This makes bone a “mechanosensitive” tissue, achieved through a life-long cycle of bone resorption and reposition through a highly regulated balance of osteoclastic and osteoblastic activity. In a classic theory, Frost ⁽⁴⁾ studied the deformation of the long bones under stress and proposed 4 levels of micro-strain, as a result of external force: 1. Disuse atrophy, 2. Steady state, 3. Physiological load and 4. Pathological or damaging load (Figure 1).

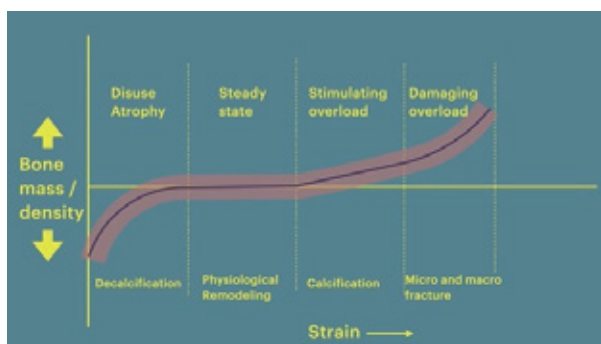


Figure 1. the four stages of bone response to strain as based on Frost's mechanostat theory 33. (Based on Frost HM, Angle Orthod 1994;64:175-188).

As a biological principle, it is reasonable to assume that a similar pattern applies to the mandible and the maxilla with different threshold values. It is further reasonable to anticipate that with different bone types and composition, age and gender, such thresholds could anyway greatly vary between individuals. Even within the same individual, structural differences might imply different strain in response to forces in different anatomic sites and for different types of implant designs and prosthetic configurations. Consequently, although we can accept that the 4 typical bone response patterns will apply to the bone of the mandible and maxilla in response to forces transferred by functioning implants, no values or thresholds have been proposed to define the conditions under which forces could become damaging. Furthermore, the question rising is what form the bone destruction will take after damaging forces of the 4th type by Frost are applied.

What will overloading damage look like on the bone?

For many years overloading of dental implants was considered as a reason for marginal bone loss after successful bone-to-implant osseointegration ⁽¹⁰⁾

(Figure 2). Such hypotheses were often based on data from Finite Element Analysis (FEA), showing higher concentration of stress in the marginal bone around the implant shoulder for some implant designs ⁽¹¹⁾. FEA is a computational mathematic model which can predict the behaviour of mechanical components under forces or strain, it cannot however account for the complexity, heterogeneity, as well as responsiveness of living tissue, such as bone. The use of FEA for the prediction of bone response under stress is therefore no longer encouraged.

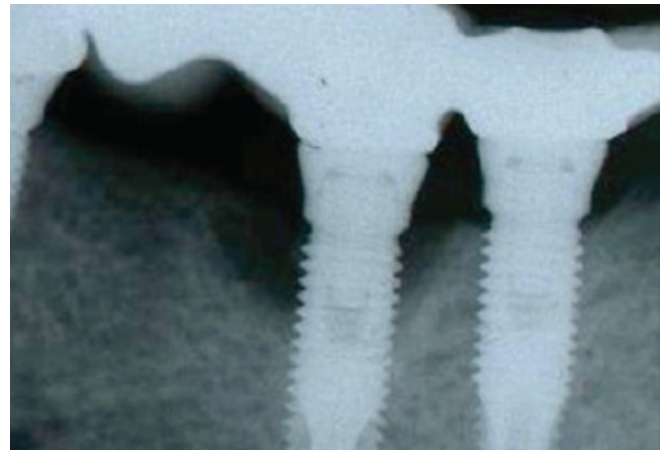


Figure 2. Marginal bone loss resulting into an intrabony defect at a Brånemark implant in the middle of a 4-unit implant bridge after 10 years in function. Such defects were routinely attributed to overloading in the period before Peri-implantitis was widely established and respective diagnostic case definitions made available.

Animal Studies

A series of studies on monkeys by Isidor ⁽¹²⁻¹⁴⁾ compared the breakdown of bone around oral implants following excessive occlusal load in conjunction with plaque accumulation. They concluded that occlusal overload can be the main factor for an already osseointegrated implant to lose osseointegration, as some implants were lost and unscrewed out of the jaw during demounting of the prosthesis, while other showed clinical mobility but with little or no marginal bone loss. Later studies however on monkeys ⁽¹⁵⁾, Labrador dogs ⁽¹⁶⁾ and Beagle dogs ⁽¹⁷⁾ showed no marginal bone loss or loss of osseointegration of overloaded implants in the absence of plaque induced inflammation. The experimental model, as well as the level of oral hygiene and the complete prevention or not of plaque-induced inflammation might have been a critical confounding factor here.

Human Studies

Human clinical studies have been very scarce with regards to assessing the effects of excessive forces on implants. Some older studies ^(10, 18-21) have suggested an association of late implant failure and overloading, without however presenting neither any clear definition of excessive load, nor any solid evidence for its role. These studies

retrospectively attributed implant failures to "overloading" or parafunctions, through subjective criteria. The definitions of parafunction were either not provided or expressing the subjective opinions of clinicians. Prospective evidence suggesting involvement of excessive forces towards loss of osseointegration is scarce and only at the level of case reports. In a rarely documented non-plaque induced loss of osseointegration, Mattheos et al⁽²²⁾ presented 2 patient cases where complete loss of osseointegration without loss of marginal bone occurred several months after successfully loading the dental implants, possibly as a result of excessive loading. In both cases, when the occlusal load was removed the implants clinically

re-osseointegrated in a period of 6 to 8 months. It has to be noted however that both cases occurred in implants placed in recently augmented sinus, which necessitates to evaluate any excessive forces in parallel to the reduced load-bearing capacity of the bone. Another similar case is reported by Zitzman⁽²³⁾ this time for a single maxillary implant in position 23, supporting a removable maxillary partial prosthesis through a telescopic crown. The authors conclude that the combination of rigid support by the implant and non-rigid support by teeth might have resulted in adverse loading and consequent loss of osseointegration of the implant, which was removed. In both the above case reports, there was no signs of Peri-implant tissue inflammation, there

was no marginal bone loss or increased probing depths and radiographically a narrow radiolucent area was visible around the implants (Figure 3–6). Finally, studies investigating the impact of non-axial loading on the bone around osseointegrated implants have not shown any consistent risk. In a 5-year retrospective comparative study, Koutouzis et al found no difference in the marginal bone level between axially placed and angled dental implants⁽²⁴⁾. Furthermore, tilting of the terminal implant by as much as 45° has been widely practiced and assessed in the fixed rehabilitation of fully edentulous patients, with no difference being documented with regards to marginal bone outcomes or loss of osseointegration^(25,26).

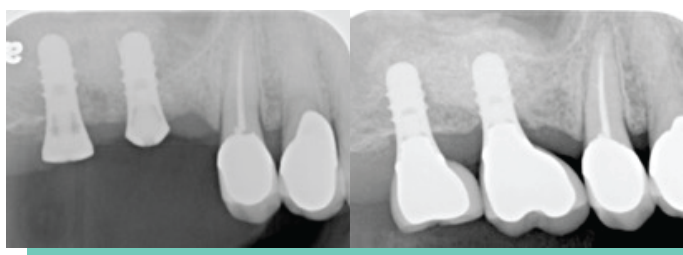


Fig 3a-b. Female, 61 years of age, non-smoker and systemically healthy, no history of bruxism or parafunctions, patient received two SP Straumann implants in the positions 16,17 (RN 4.1 mm x 10 mm) with simultaneous lateral window sinus augmentation (a). 8 months after placement the implants were restored with two single screw-retained crowns, torqued with 35 Ncm (b).



Fig 4a-c. Six months post restoration, implant crown 16 was slightly mobile in bucco-palatal direction, with the dislocation of the crown of no more than 1 mm. No further clinical signs were registered, no probing depth greater than 2 mm and the attachment of the soft tissues at the implant collar appeared firm. The patient could not recall any incident of trauma while chewing or acute pain in the region.

While attempting to unscrew the crown with the wrench, the crown rotated approximately 30° counterclockwise without release of the abutment screw (a), indicating a spinning of the implant in the bone socket. After crown was removed (b) the periapical radiograph showed no significant change in the bone height from that of the baseline, note however the consistent thin layer of radiolucency all around the implant 16 (c).



Fig 5a-c. The crown was removed, and a closure screw was placed on the implant, which was left in place. The patient was recalled on a monthly basis to ensure oral hygiene as well as to follow up the clinical stability of the implant. Three months later and as the implant returned ISQ value of 78, impression was taken (a) for the manufacturing of two splinted crowns, which were placed and torqued down with 35 Ncm (b,c) without any spinning, movement, or discomfort, suggesting that re-osseointegration of the implant 16 was achieved.

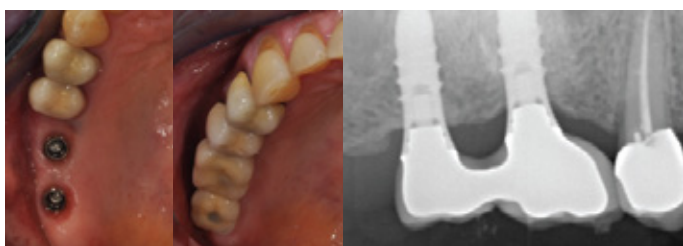


Fig 6a-c. At 3-month post-loading, the implant crowns were removed and an ISQ measurement for the implant 16 returned a value of 94. The implant appeared clinically stable, peri- implant tissues were free of signs of inflammation and the patient had experienced no complaints. Periapical Radiograph showed no difference in the bone height and density.

Conclusions and ...more to come!

Conclusively, although it's difficult to clinically quantify excessive forces or "overload", such forced could impact already osseointegrated implants. In rare cases, total loss of osseointegration due to excessive or adverse loading appears possible, progressive marginal bone loss however has never been proven as a result of forces. At the same time, the alveolar bone has significant ability to adapt to functional load, while its tolerance varies among individuals, location, and other anatomic and physiological parameters. Bone density/quality of bone is a large influencing factor.

But what about the mechanical components, screws, abutments and veneering? Could excessive or adverse loading lead to mechanical failures and how to prevent this?

For more on these questions, follow the second part of this article in the next issue of the Dental Diaries!

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Modified All-On-4 Zygomatic Implant Functional Reconstruction of Maxillectomy Defect: from Mid-facial Degloving (Scarless) Resection to Immediate Implant (Graftless) Rehabilitation



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Maxillectomy for malignant or aggressive oral maxillofacial tumor is the gold standard of surgical treatment. However, the resection of maxilla could lead to both oral and cosmetic incapacity in this group of patients. The Weber Ferguson incision could leave conspicuous scar and ipsilateral facial depression due to the loss of skeletal support in addition to the loss of oral dental speech function. With the technological advancement in past few decades, 3D printing & digital planning of jaw reconstruction seems provide twilight of full functional reconstruction. This manuscript will report a 36-year-old female patient suffered from a huge right maxilla myxoma abutting to the orbital floor superiorly need maxillectomy as radical treatment. She had a serious concern about both cosmetic and function sequelae once she committed herself to this devastating ablative treatment. Furthermore, she wished to resume her normalized life shortly and requested for no further major bone grafting for restoring jaw defect. All her concerns posed extreme challenges to the attending surgeon. Finally, a 2-phased Scarless maxillectomy with later zygomatic implant Graftless immediate dental implant reconstruction had performed with an excellent aesthetic and functional outcome after 6th year follow-up in 2022.

Odontogenic myxomas (OMs) are locally aggressive benign mesenchymal jawbone neoplasms. While OMs predominantly involving the mandible, maxillary tumors are more aggressive than its occurrence in mandible. According to WHO classification¹, OM is a benign tumor of mesenchymal origin. It accounts for 3 to 6 % of all odontogenic tumor. It has been reported the relative period prevalence in Hong Kong² was 8.4% then in another major Chinese population retrospective studies³ was 4.6%. The most common age of detection ranges from second to fourth decades with a slight predilection for females. OM lesions behave as silently growth without pain until large size causing jaw asymmetry. Once the tumor extended into nasal sinus may causing obstructive symptoms and pain or even exophthalmos or neurological disturbance in severe cases. The surgical treatment of OM varies from curettage to radical resection. The tumor presents as

Case History

A 36-year-old Chinese female presented with a right upper jaw swelling without any pain until recent wisdom tooth extraction that her dentist informed her about the suspicious lesion in plain x-ray. She sought consultation from few tertiary oral maxillofacial units in mainland China with incisional biopsy provisionally diagnosed as fibromyxoma. Finally, she was referred to see me for definitive surgical management in Hong Kong in July 2016. Further incisional biopsy confirmed histology as odontogenic myxoma. Clinically the mass was firm and extended from alveolus to infraorbital region without any neurosensory deficiency. OPG x ray showed honey-comb appearance of right maxilla then followed by CT investigation showed large expansile hypodense mass involving the right maxilla sinus, measuring 3.5 x 4 x 5cm in dimension. (Figure 1 A, B, C, D) There was associated bony thinning and destruction of anterior and lateral sinus wall. Multiple foci of calcification within the lesion are noted. The roof of maxillary sinus or the right orbital floor is intact without evidence of tumor extension to the right orbit.

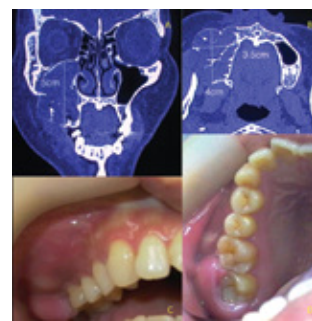


Figure 1. (A, B, C, D) CT imaging versus intra-oral views showed the tumor extension size 3.5x5x4 cm in dimension

non-encapsulated and gelatinous mass therefore wide margin excision should consider adequate in primary treatment to reduce recurrence⁴.

As the orbital floor is free from tumor extension, subtotal maxillectomy should be adequate for clearance. Both aesthetic and full functional reconstruction as the expected outcome parameters due to her young functional age. She had also requested no major bone graft reconstruction after the resected maxilla as her essence of definitive dental management. Therefore, patient specific treatment path was formulated as followings:

- ◆ General Anesthesia for right subtotal maxillectomy via mid-facial degloving approach (no external facial scar) with immediate temporalis muscle flap to reconstruct the maxilla defect and cranioplasty augmentation of her the post-operative temporal hollow defect;
- ◆ 3 months later for modified All-on-4 zygomatic implants dental implant graftless rehabilitation under local anesthesia.
- ◆ Regular follow-up with MRI/CT to monitoring of any tumor recurrence.

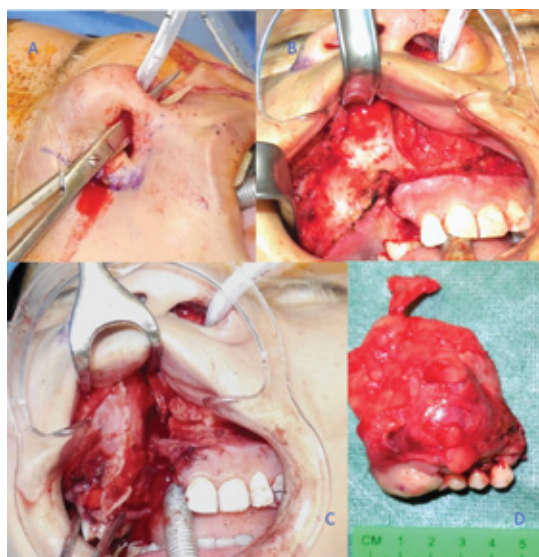


Figure 2. (A, B, C, D) Midfacial degloving incision via transfixion nasal mucosal incision in conjunction to labial vestibular incision for entire exposure of mid-face to perform subtotal maxillectomy



Figure 3. (A, B) Harvesting of right Temporalis muscle flap and inset into oral defect after maxillectomy



Figure 4. (A, B, C, D) Digital Planning for precise location to simulate the pilot drilling by 3D skull printing and DTX software for Zygomatic implant and alignment with other 3 immediate implants placement planning – A. pre-implant occlusion vs B. final screw retained bridge N.B. abutment screw access hole of the zygomatic implant precisely on the occlusal surface of the molar tooth



Figure 5. Journey of Occlusal Restoration from preoperative to final dental implant rehabilitation

Midfacial Degloving Approach For Subtotal Maxillectomy & Temporalis Muscle Flap Repair (Figure. 2 & 3)

Without adequate exposure of the tumor, it may jeopardize both the tumor clearance and access control of any major vascular perioperative accident. Though Weber Ferguson incision exposure had long been a standard maxillectomy access with large range of conspicuous mid-facial scar problems. Casson et al in 1974 first described intraoral vestibular incision in conjunction with inter-cartilaginous and transfixion nasal mucosal incision for full exposure of entire middle third of the face without any external facial scar⁵. Nevertheless, the surgeon should be very experience and skillful in external rhinoplasty. Howard & Lund in 1999 clearly delineated the role of the midfacial degloving approach⁶ in resection of both malignant and benign sinonasal pathologies in a cohort of 86 patients. Though this scarless access still with its limitation by the presence of infraorbital nerve to restrict further superior skeletal exposure. Whilst coronal incision or subconjunctival incision in conjunction with midfacial degloving seems offer the best chance of scarless full mid-facial access. In this patient, resection of infraorbital nerve was inevitable due to the lesion encaging totally of anterior maxillary wall therefore the midfacial degloving access would allow the surgeon to have a sufficient visibility and accessibility to nasoethmoidal and retro-maxilla region peri-operatively to secure a safe tumor clearance.

Temporalis muscle flap deployed for maxilla defect repair has been well recognized as the most reliable workhorse^{7,8}. The flap is harvested via hemi-coronal incision with oblique reflection of the superficial layer of deep temporal fascia to preserve the frontal branch of facial nerve. By hinge rotation underneath the zygomatic arch inset the flap to obliterate large hemi-maxilla defect. It is robust and highly vascularize that ensure promising repair so as to provide tissue bulk augmentation of facial cheek depression after maxillectomy. Temporal hollowing is a known donor site deformity need cranioplasty (methyl-methacrylate fill up the temporal defect) to accomplish the best aesthetic outcome.

Digital Surgical Planning

In planning of this complex case, CT digital planning assist the surgeon to understand the resection margin that close to vital structure such as orbital floor, eye globe, ethmoid sinus in the course of resection. Perioperative navigation has now been a well-established armamentarium in major maxillo-facial surgery. With the aid of 3D skull printing⁹ materialize a surgical simulation for the implant surgeon to decide the insertion trajectory to the zygoma body especially the defect was fully concealed by the temporalis muscle flap. (Figure 4) A prefabricated surgical stent was translating the occlusal pilot drilling in alignment to other three implants within the arch peri-operatively. Nowadays 3rd generation dynamic CIAS (computer implant assisted surgery) system with the augmented reality glass could provide a real time navigation without the need of surgical stent.¹⁰

Modified All-on-4 Zygomatic Implant Graftless Functional Dental Rehabilitation

After phase I resection surgery, tumor clearance was confirmed by postoperative MRI study. Patient expressed her intense wish to have dental rehabilitation. Various modifications had been reported in the literature for zygomatic implant rehabilitation for hemi-maxillectomy patients either in stages or as single stage procedure by meticulous flap perforation design¹¹ or a specially designed reverse zygomatic implant¹² for limited jaw opening

patient. A modified All-on-4 immediate implant placement after extraction of contralateral front teeth that would accomplish a later-alized full arch occlusal scheme to avoid the need of large block bone graft reconstruction. The biomechanical consideration after extraction of front teeth that could allow a tilted implant insertion at the resected margin basal bone that form the All-on-4 metal frame suspension bridge. The promising survival rate of immediate implant placement in full arch fixed prosthesis^{13,14} could be ranging from 97.3% to 98.2% therefore the boldly decision for dental implants replacement was opted to achieve prosthodontic stability in maxillectomy situation. Furthermore, the Zygomatic implant distal leverage need to integrate into the body of the definitive dental prosthesis to avoid excess lateral movement measured by maximum von Mises stress similar to the Type 4 maxilla buccal defect¹⁵ (Gumrukcu Z. in 2019). The whole implant surgery was performed under local anesthesia and percutaneous nerve block at zygomatic region as a smooth and painless procedure. Immediate temporary screw retained bridge was delivered one week later after the settling of excessive swelling in temporalis muscle perforating sites. Full oral dental functional reconstruction was completed within 6 months after primary surgery. (Figure.5) She was then returned to her vibrant life journey. By 6th year follow-up, she is well satisfied by both cosmetic and oral dental function without evidence of tumor recurrence. Some minor post-operative complications including stenosis of nasolacrimal duct need dacryocystectomy (DCR) by ophthalmologist and notable peri-mucositis at the zygomatic implant abutment emerging through the oral side of the epithelialized temporalis muscle that herself could well maintain by vigorous local brushing.



Figure 6. Smile of confidence<Scarless & Graftless reconstruction> by post-operative 3 years after midfacial degloving approach maxillectomy followed by modified All-on-4 immediate Zygomatic implant dental rehabilitation assisted by precision digital planning

Conclusion

Full functional oral maxillofacial dental rehabilitation in maxillectomy patient is always diverse and challenging. For this young female patient with great concern of both the cosmetic and functional sequelae after ablative tumor resection posed challenges to the operating surgeon. However, Midfacial Degloving approach for maxillectomy would be the best cosmetic for tumor resection option. An innovative modified All-on-4 Zygomatic implant immediate rehabilitation of her lost dentition was achieved within 6 months' time without any major bone grafting procedure. (Figure 6) Her committed faith helps her to reach a full function reconstruction destination.

Consent for publication
Patient fully approved the author to publish this manuscript

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back home in the evening after
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just bought. But is it worth opening
the bottle for just a glass?
What will you do with rest...
maybe better wait for the weekend?
We all know this very well,
so today our wine team has
searched some options for you...!



Wine is all about chemistry and although chemistry works to produce the beautiful taste and aromas while in the bottle, it's chemistry again that works against us once the bottle is open. Oxidation in wine is a chemical reaction that occurs when the oxygen in air comes into contact with the alcohol. The two elements react and cause the alcohol to convert into acetaldehyde. Acetaldehyde is an organic chemical compound that naturally occurs in fruits, breads, coffee, and wine. The clock is ticking in as little as a day, oxidation can spoil a wine. First, the fruity aromas disappear, then its flavors turn dull and flat, with a sharp or bitter edge, and the color changes. Soon enough, this process will turn wine into vinegar. So yes, true indeed, wine is to be enjoyed not long after leaving the bottle.



Can We Stop Oxidization?

Not really. But there might still be some things one can do to keep the wine taste and aroma for longer after it is opened. Let's see some common and some less common options...!

Just put the cork back in and leave it out for tomorrow?

If all you're doing is putting the cork back on, there's still oxygen in the bottle that's in contact with the surface of the wine which will continue the oxidation and degradation. Depending on how fine the wine is, changes in taste and aroma will be noticeable the day after.

Try to pump out some air out with a "vacuum pump"?

While it may feel like we are doing something to help the situation, pumps merely remove only a little of the air from the bottle, never all. What is left will be enough to continue the oxidation.

Cork it back and put it in the fridge?

This is probably the best of the 3 options so far. Putting wine in the fridge does reduce the rate of oxidation but does not stop it. Unfortunately, the lower temperatures increase the rate of "oxygenation", so, the oxygen that's in contact with the wine is absorbed more rapidly. Again, after a day or two your wine will not be the same again.

There are however some more professional solutions. In fine wine bars you might have already seen some funny looking refrigerators with slots for the wine bottles and marks of pressure and temperature. This are usually special pumps that take away the air from the open bottle while pumping in some neutral gas, which does not react with the wine, thus reducing any risk for oxidation and loss of taste.

You don't have to buy a whole professional set up however, just to enjoy your daily glass of wine. Cheaper and easier solutions are available, such as the Winesave (www.winesave.com.sg). Winesave is a proven premium gas-based wine preserver. Invented back in 2010, it was the first portable, handheld canister to contain 100% argon. The solution is to simply apply some argon gas to the leftover bottles before putting them in the fridge. Argon is all-natural, completely inert, colorless, odorless, tasteless and much heavier than air, so it sinks in the bottle to form a natural layer just above the wine preventing oxygen from being absorbed. This means that even the most premium wines will maintain their peak flavours for a long time after being opened. It's been tested by the who's-who in the wine industry and used by many restaurants, bars, clubs, hotels and caters throughout the world. It's simple, affordable, and effective.

So even if wine is best when shared, next time you feel like a relaxing glass of wine, don't let the bottle hold you back! Cheers!



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	<i>Including: CBCT x 1, Dental Chair x 2, Compressor & Suction x 1, X-Ray x 1, Autoclave x 1, Intra-Oral Scanner x 1</i>				
Consumables	Initial Stock of Daily Consumables	\$ 200,000	30%	\$ 140,000	\$ 60,000
	<i>Including: Instrument, Handpiece, Restorative, Endo, PPE & Disposables</i>				
Finding Location	Property Agent Commission (Assuming \$80,000 rent)	\$ 40,000	50%	\$ 20,000	\$ 20,000
Design & Renovation	Cost of Design & Renovation	\$ 700,000	10%	\$ 630,000	\$ 70,000
Clinic Branding	Design & Production Fee	\$ 10,000	100%	\$ 0	\$ 10,000
IT Support	Supply and installation of computers including network set-up	\$ 45,000	30%	\$ 31,500	\$ 13,500
Software	3 Months Free Trial of "ClinicSolution" Management System	\$ 5,000	30%	\$ 3,500	\$ 1,500
Company Registration Fee	Application & Cost for Clinic's Business Registration	\$ 6,500	100%	\$ 0	\$ 6,500
Total	Estimated Set Up Cost	\$ 2,006,500	Save 24%	\$ 1,525,000	\$ 481,500

* Applicable to Hong Kong market only

Domaines Barons de Rothschild Lafite appoints Omtis Fine Wines to distribute Long Dai and Hu Yue

The wines from Domaine de Long Dai, its Chinese Estate, in Hong Kong and Macau and selected export markets in Asia

Long Dai (瓏岱) and Hu Yue (琥岳), the second wine of the estate Domaine de Long Dai, owned by Domaine Barons de Rothschild Lafite “DBR Lafite”, will be distributed in Hong Kong and Macau and selected export markets in Asia, by Omtis Fine Wines, one of the most highly reputed family-owned wine merchants in Hong Kong, with over 100 years of experience in delivering luxury in Asia. Three years ago, in 2019, Domaine de Long Dai opened its doors to the public for the first time and released its first wine: Long Dai 2017. This year marks another milestone, the first time that Hu Yue is unveiled to markets outside Mainland China, with the release of the 2019 vintage and exclusively through Omtis Fine Wines.



The Story And The Name

“Our family have been winemakers at Lafite for 150 years, so it is in our culture to be patient and take our time to make sure we release a wine we are proud of,” said Saskia de Rothschild, at the head of the family’s wine estates. She continues, “We are currently in the first chapter of a very long story, as winemakers in China”. The choice for the name Long Dai came from the Rothschild family’s wish to find an identity that could show how this wine is the perfect balance between nature, and the care of men and women who have helped it reveal its best potential. It was also important to find a name that showed tribute to Shandong’s exceptional local history. Inspired by the Taishan sacred mountain in Shandong, Long Dai (瓏岱) represents an idealized mountain that rose through the power of nature and was then carefully chiselled by human hands. The

choice of name describes what the Rothschilds do as winemakers: try to perfect the raw materials provided by nature.

“The origin of the name Hu Yue, was the idea to reveal a sacred alliance between Chinese culture, respect for the elements and nature’s uncontrollable cycle.” Saskia de Rothschild continues, “What better character than Hu (琥) that refers to a jade tablet, that was an important tool used in ancient times by farmers to pray for a good harvest!” The character Hu (琥) also recalls the symbol for the tiger, the second sacred animal in China. The second character Yue (岳) represents all the 5 sacred mountains of China and links back to the sacred Mount Dai referenced in the name of the estate.

Omtis Fine Wines And DBR (Lafite) Continuing Through Generations

Guillaume Deglise, International Director for DBR Lafite, and Philippe Bera, CEO of Omtis Fine Wines Hong Kong, agree that both families share a long-term vision and philosophy:

“Long Dai’s team in Shandong and the DBR Lafite team in Bordeaux are delighted to count Omtis as a new partner to develop the story of our wines on key Asian markets outside Mainland China,” commented Guillaume Deglise. He continued, “We are just at the beginning of Long Dai’s story and look forward to a long-lasting relationship as partners.” Philippe Bera said, “My family started the business in Shanghai in 1919, from running cinemas, to distributing luxury watches, and now to fine wine. Always

focused on quality and customer satisfaction, always nimble, and always evolutionary. We have never swayed from our core goals and beliefs, but we have remembered the importance of changing with the times and bringing new ideas and creativity to inspire the team and adapt the organization. This, we believe, coincides, with the Rothschild's journey in inspiring the world of wine by cultivating a world-class vineyard in China that can compete with the best.

We are honored to continue our longstanding and fruitful partnership with DBR (Lafite) with their new 'story' in China. This demonstrates, not only our commitment to our heritage and roots in China, but also our eagerness and dedication to bring high-end wines to our customers across Asia."

The Unveiling of The 2019 Vintage

The priority of the Domaine de Long Dai team has been to continue to learn from the terroir and to find the best expression of this Shandong terroir, never losing sight of creating a unique Chinese wine with a French touch. This year has seen many developments within the estate in search for precision and a deeper understanding of how environmental factors in the valley affect their specific terroir, particularly regarding the subject of irrigation. "The 2019 vintage was a challenging year due to the lack of water in Summer. Our team studied the soils in order to develop the right protocols in case of a difficult" says Charles Treutenaere, Estate Manager, "the 2019 is the perfect example of a wine that expresses all the potential of its terroir and of the climate of this year, a subtle surprise".

The Grand Vin of Long Dai 2019 is embodied with a balanced structure and elegant fine grain tannins with notes of black fruit and bold spices. It is composed of Cabernet Sauvignon 85%, Cabernet Franc 9%, and Marselan 6%.

The second wine, Hu Yue 2019, is defined by aromas of red fruits such as red currant and cherry, followed by spicy notes of liquorice and white pepper revealing a complex and yet refined nose. The attack is fresh, with a balanced structure and an enveloping mouthfeel. It is composed of Cabernet sauvignon 57%, Marselan 17%, Syrah 15%, and Cabernet franc 11%.

Philippe Bera adds, "after tasting these wines in February, and experiencing their respective freshness, I share the view of the winemaking team, that these wines will age beautifully."



DISH PAIRING



Beef Sirloin

Domaine de Long Dai handpicked sirloin of black cattle raised in Yantai to create their signature "Slow Cooked Black Pepper Marbled Beef Sirloin with Cauliflower Puree". The beef sirloin is juicy and tender. Slow cooked under 60°C, it retains important proteins and offers a mouth-watering sensation. With the organic cauliflower puree, it is a perfectly balanced dish. Long Dai 2019 is a great companion with the rich flavours of the beef; the black fruit aromatics and delightful hints of spices of the wine together bring an elevated dimension to the dish.



Spring Chicken

Domaine de Long Dai has a thorough understanding on the "East meets West" concept, not only in winemaking but also in culinary. To pair with Hu Yue 2019, the winery recommends a fusion dish "Crispy Spring Chicken on Ham & Scallion Pancake". The crispiness and juiciness of the spring chicken is complemented by the full fragrance of scallions. Compared to Long Dai, its second wine Hu Yue is more lively and youthful, delivering a refreshing sensation with raspberries, violet, liquorice and white pepper flavours. It is certainly a perfect match with this aromatic dish.



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A Safe, Predictable and Efficient Way to Create a Lateral Window during Sinus Floor Elevation



Dr. Tommy Kok-chu Fung

A lack of vertical dimension of alveolar bone at the posterior maxilla is a common challenge in implant dentistry. Typical causes are the atrophy of the alveolar bone after tooth loss, or a pneumatized maxillary sinus, or both. Advances in material science and nanotechnology now allow for stronger implants with shorter length. Short implants of 8 mm or less are commonly used in cases of limited vertical space, with a promising survival rate that is comparable to more standard length implants (Lemos, Ferro-Alves, Okamoto, Mendonca, & Pellizzer, 2016). In other cases, however, it is impossible to place an implant without performing a sinus floor elevation (SFE). The lateral window sinus lift is the classical approach to improving residual bone height, first described over 40 years ago (Boyne & James, 1980). Development and refinement of surgical instruments and techniques then allowed us to elevate the sinus floor, albeit to a lesser extent, with predictable results using a transalveolar approach (Pjetursen & Lang, 2014). Both approaches result in implant survival rates comparable to implants placed in normal bone (Jensen & Terheyden, 2009). The clinical decision as to the surgical approach is mainly based on anatomical parameters including subantral bone height, sinus width, sinus floor anatomy, the presence of sinus septum, etc. (Stacchi et al., 2020).

The lateral window SFE is a reliable and clinically well-documented technique, which is indicated when residual crestal bone height is less than 5 mm. It is used as a staged augmentation procedure to increase crestal bone height before implant placement. Sometimes, when residual bone volume allows adequate primary stability of a dental implant, simultaneous SFE with implant placement can be considered. Nevertheless, SFE can be surgically demanding, especially for young clinicians. One crucial step to success is to create proper access to the part of the sinus where grafting is needed.

The “Optimal” Window

A lateral window opening of an appropriate size at a proper location facilitates a smooth sinus floor elevation. A couple of aspects that dictate how an “optimal” window looks include:

■ Window Size & Location

The lateral window should be large enough to allow proper visualization of the surgical site, access of surgical instruments for safe lifting of the Schneiderian membrane and delivery of the bone graft with ease. On

the other hand, it should not be too large to jeopardize the retention of grafting material and reduce the amount of vital bone wall for its osteogenic power. Depending on their experience, some dental surgeons could perform the same surgery efficiently and effectively with a smaller sized window. Generally, it is recommended to create a lateral window measuring at least 5 mm vertically and 8 to 10 mm horizontally if a single implant is to be placed. It was suggested that the ideal position of the window is to be as mesial and low as possible in relation to the maxillary sinus (Zaniol & Zaniol, 2017).

■ Bone Wall Thickness & Convexity

Sinus bone wall can be paper-thin. So much so that it can appear bluish when a mucoperiosteal flap is raised, allowing clinicians to know exactly where the sinus is located. In these cases any sharp cut could lacerate the sinus membrane. It is however a surgical advantage if the window bone rim is within a certain thickness, i.e., within 1 mm. Thicker bone wall may increase the cutting time and reduce visibility when approaching the sinus membrane. If the window is small, positioning of sinus curettes may be difficult. Besides, some sinus walls appear flatter and others more convex, as they extend from the zygomatic buttress. It could be hard to lift a window at a convex slope, which requires more skill to avoid damaging the membrane.

■ Neighboring Teeth

The roots of the neighboring teeth may present with different curvatures and lengths. Sometimes they may be proximal to the anterior wall of the sinus, and close to the superficial cortex of the alveolar bone proper. Damage to adjacent teeth during surgery may result in root resorption or pulpal necrosis, especially if the neurovascular supply to the dental pulp is interrupted. Keeping a good 2 mm away from them is essential to avoid unwanted post-operative complications.

■ Sinus Septum

The sinus septum, which is present in roughly 30 percent of patients, is a known risk factor for sinus membrane perforation (Testori, Weinstein, Taschieri, & Wallace, 2019). Different surgical approaches were discussed in the literature to cope with this problem. For a fully developed septum that separates the maxillary sinus into an anterior and a posterior zone, two windows could be prepared on either side of the septum. Sinus floor elevation could then be performed separately for the two compartments. On the other hand, for a relatively small septum, a larger window encompassing the septum

could be prepared. By removing the sinus bone wall, the lining membrane can then be elevated from both sides of the septum.

■ Arterial Anastomosis

An accidental cut into an artery near the maxillary sinus may not result in a life-threatening event, but it certainly impairs surgical site visibility and increases the difficulty of managing the surgery. The blood supply to the maxillary sinus has three origins: the infraorbital artery, the posterior lateral nasal artery, and the posterior superior alveolar artery (PSAA), with their intercommunicating anastomoses (Rosano, Taschieri, Gaudy, & Del Fabbro, 2009). Intraosseous and extraosseous anastomoses run along the lateral wall of the sinus, in which the intraosseous vessels are usually situated at a more crestal position than the extraosseous counterpart (Solar et al., 1999). An intraosseous anastomosis is present in almost 100% of patients but only visible on cone-beam CT imaging in 50% of the cases. An anastomosis of the PSAA running across the lateral wall of the maxillary sinus is a potential threat. It was reported to be present in 20% of the normally positioned antrostomy area, and presents a potential risk of intraoperative hemorrhage (Elian, Wallace, Cho, Jalbout, & Froum, 2005).

The Concept of Guided Sinus Surgery

All the above factors must be taken into consideration when selecting the desired area in which a lateral window can be created. Before the cone-beam CT (CBCT) was commonly available, much depended on the anatomical knowledge and surgical experience of the operator. Extraoral and intraoral X-rays provided information about the size of the sinus in relation to the neighboring vital structures. Visual inspection and percussion feedback on the bony surface during the surgery often provided hints as well. Moreover, measurement could be performed from neighboring teeth and the alveolar crest to determine where the desired window should be prepared. The ideal location for the lateral window was approximated. Once a window was created, adjustment could be made by incremental enlargement to achieve the preferred size and shape.

With technological advances, CBCT allows us to perform even more realistic surgical planning than previously imagined. It is possible to see, in different planes and in three dimensions, how the different anatomical structures relate to one another. Intraosseous blood vessels running along the sinus wall can be identified. In the case of an irregularly shaped sinus, we can design a window which follows the slope of the sinus floor to tailor our cut. The location and dimension of the sinus septum can also be evaluated (Neugebauer et al., 2010). It is now possible to draw the optimal lateral window in the planning software with full confidence of accuracy.

Currently, CAD/CAM technology also allows comput-

er-aided implant surgery (CAIS) to be accurately carried out (Smitkarn, Subbalekha, Mattheos, & Pimkhaokham, 2019; Tahmaseb, Wu, Wismeijer, Coucke, & Evans, 2018). Surgical guides are fabricated to facilitate implant osteotomy and placement. The same principle can be applied to the creation of a surgical guide for a lateral window for sinus floor augmentation (Strbac et al., 2020; Zaniol, Zaniol, Tedesco, & Ravazzolo, 2018).

Clinical Application of Sinus Guides

A few cases show how a sinus guide allows an efficient and safe antrostomy to be performed. In the first case, a CBCT, virtual study model and diagnostic wax up model were imported into an implant planning software (coDiagnostiX version 10.2, Dental Wings). The window was designed to stay close to the anterior and inferior border of the maxillary sinus, with sufficient space for the instrument to work at the target grafting area.

Within the planning software, the cut profile was drawn, taking into consideration that a round bur or piezo tip would be running within. It was therefore designed to be slightly larger than the actual window. By extending the cut profile into a full circle, it gave complete guidance for the outline of the window. It also suggested the superior extent of the mucoperiosteal flap required to allow adequate exposure for the antrostomy. The dimension of the window guide was set to be an offset of 0.5 mm away from bone, with a window rim width of 1.5 mm and thickness of 1.0 mm. According to these parameters, a thin guide was produced to reduce spatial hindrance and allow maximum visibility for the surgery. The actual guide would be flexible rather than rigid due to the slim design. This was not a concern because the guide was not intended to physically guide the instrument. It only served as a reference for the window that would be made freehand. The rest of the guide was designed to cover the occlusal surface of all maxillary teeth to provide adequate stability. Inspection windows were created at a couple of occlusal spots to allow verification of proper seating of the surgical guide during use. The subsequent surgery was performed as described in the photos.

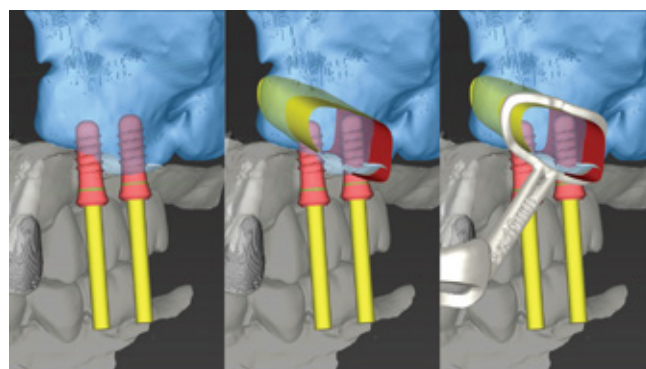


Fig. 1: Imaging reconstruction allowed us to plan the implant position with a prosthetically driven approach. The position of the maxillary sinus was clearly visualized as the blue area on the diagram. The cut profile (middle) was designed while considering the target graft zone, anatomy of the sinus and related structure, and the access direction of the surgical instrument. The surgical guide was designed accordingly

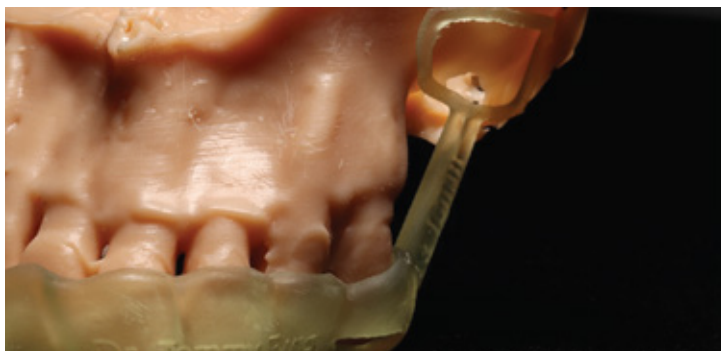


Fig. 2: The surgical guide was printed out and tried-in on a 3D surgical skull model to illustrate the positioning of the guide in function. The guide was tooth-supported. It fitted well and rested firmly on the teeth while the sinus window guide stayed 0.5 mm away from the bone to avoid direct contact and poor seating. This is important because 3D reconstruction of bone structure has a certain degree of inaccuracy

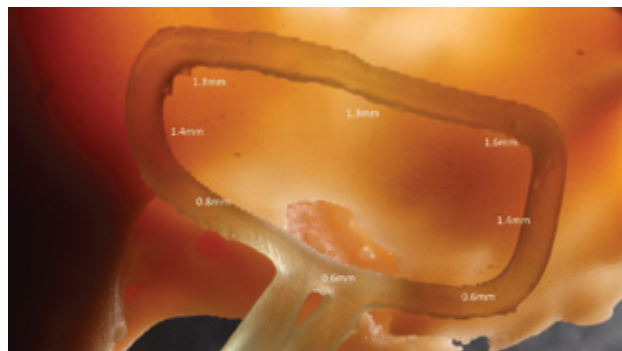


Fig. 3: The sinus bone wall thickness was measured in the planning software in advance of the surgery. This allowed the operator to estimate how deep the cut would be in a different part of the window

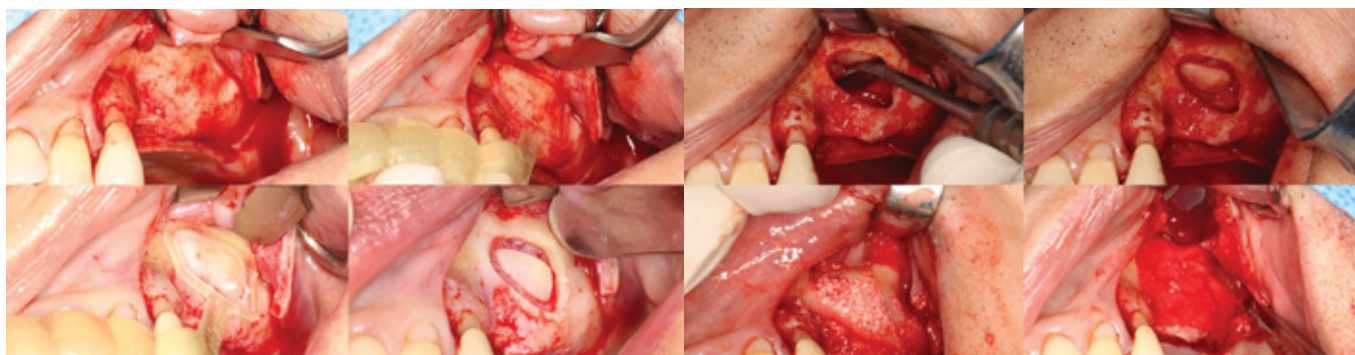


Fig. 4: During the surgery, a full thickness flap was raised until the guide was fully seated. The surgery was executed as planned, with the sinus window being cut with a diamond coated ultrasonic piezo tip. There was no need to modify the sinus window any further. Once the bone surface was cut, the surgical guide was removed. The cut continued to the Schneiderian membrane until the sinus window was fully prepared. The margin of the anastomosis was further smoothed out with the ultrasonic tip

Fig. 5: The sinus membrane was carefully detached from the bone wall, and the bone lid was pushed into the sinus, acting as the ceiling of the grafted zone. Membrane elevation was uneventful, and it was easy to reach the anterior border of the sinus. A Valsalva maneuver was performed to confirm no membrane perforation. The space was grafted with large granule DBBM and the sinus window covered by a layer of resorbable collagen membrane. The surgery was completed with primary closure of the surgical site

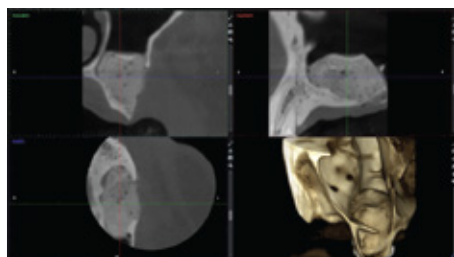


Fig. 6: A post-surgical cone-beam CT verified a well-contained, grafted zone in the anterior inferior part of the maxillary sinus, exactly at the desired site where implants would be planned in the next surgery

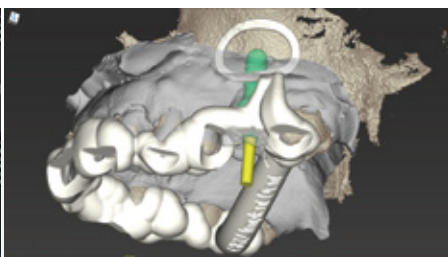


Fig. 7: A surgical guide was designed incorporating both the sinus window guide and the implant osteotomy guide for simultaneous bone grafting and implant placement



Fig. 8: A post-surgical cone-beam CT showed the bone graft at the desired location in the sinus and implant placement into the grafted zone

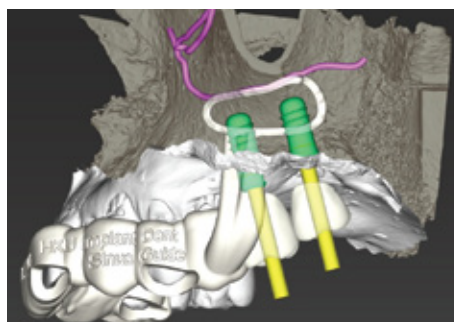
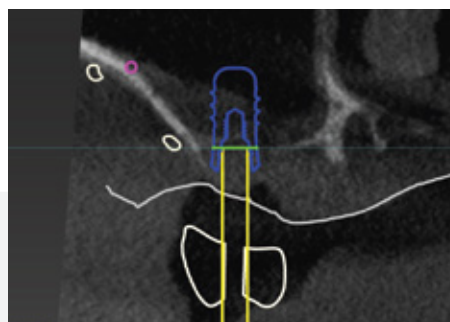


Fig. 9: The position of the anastomosis was mapped in the 3D planning software. Using a piezo cutting instrument, nowadays the chance of severing a blood vessel is small. The guide served to provide information for the clinician to make insightful decisions during the surgery

Fig. 10: A cross-section showing the window rim designed at the level of the anastomosis, which serves as a clinical reference to provide the surgeon with "indirect visualization" of the vessel during the surgery. Outline is bolded for easy reading.



The next example demonstrates a case of similar design. Since residual bone height (4 mm) was sufficient to achieve good primary stability of an implant, SFE and implant placement could be performed simultaneously with a surgical guide incorporating both features, as described by Sun and co-authors (Sun et al., 2020). The surgical plan began with a proper prosthetic set-up of the missing tooth, with good alignment within the arch and occlusal loading directly opposite the mandibular teeth. The implant was virtually placed according to the set-up to allow axial loading, screw hole opening at the center of the occlusal table, and a periodontally friendly emergent profile design. After determination of the correct 3D positioning of the implant, the sinus window was designed to allow easy access to the location where sinus floor elevation and grafting were most needed, taking into consideration the anatomical characteristics mentioned previously. The surgery was performed accordingly.

Conclusion

When state-of-the-art imaging techniques allow us to see beyond the surface anatomy, and CAD/CAM technology helps transfer our plan into the actual surgical field, the beauty of a surgery is to perform it as designed. With the popularization of ever more accurate and economical 3D printers, this has become more convenient than ever. The availability of digital tools opens up new possibilities. Their potential use is limited only by our imagination. Precise lateral window opening helps us to avoid some, but not all of the risks of sinus floor elevation surgery. Pre-surgical planning has become more demanding, but surgery time is shorter and improvements in safety benefit our patients, which is well worth the effort.

For more detail, check out the following material on the ITI Treatment Guide and ITI Academy:

- ITI Treatment Guide Volume 5: Sinus Floor Elevation Procedures
- ITI Treatment Guide Volume 11: Digital Workflows in Implant Dentistry
- Surgical Planning and Procedures, Principles of Sinus Floor Elevation by Simon Storgard Jensen
- Surgical Planning and Procedures, Lateral Sinus Floor Elevation by Simon Storgard Jensen

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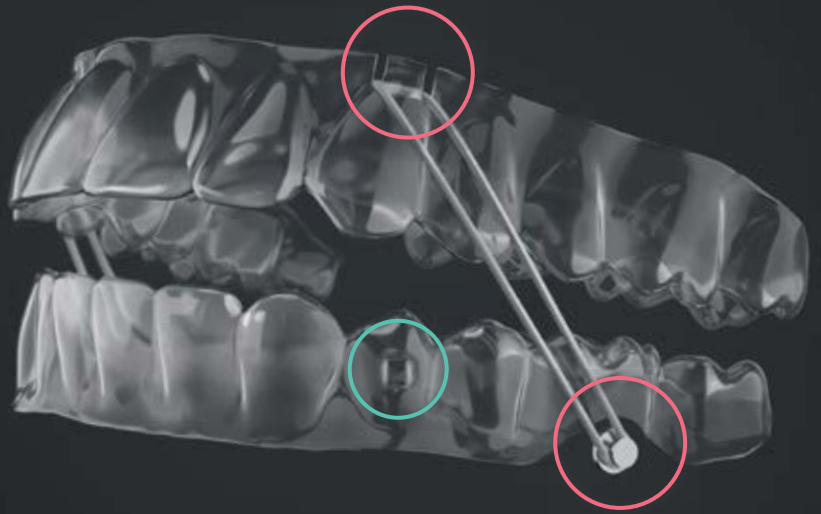
(3) 84% experienced relaxed vision at all distances. (percentage of participants who 'strongly agree', 'agree' or 'somewhat agree'). External consumer acceptance test on the ZEISS SmartLife Lens Portfolio, n=182 study participants. Aston Optometry School, Aston University, UK, 2019.

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An Updated Literature Review on Accelerated Orthodontic with Relevant Cases Report



Dr. Kevin NG



Dato' Dr. How Kim Chuan

Orthodontic tooth movements take long time to complete, the average treatment time is usually about 24-36 months to achieve and this has been one of the main reasons to hinder patients receiving treatment. To avoid long term suffering and to enhance patient co-operation and compliance, mechanical vibrations have been used to accelerate tooth movement and shorten treatment times. Although different clinician holds different views regarding accelerate orthodontics effects and outcomes, 2 complicated cases were reported here, and they were performed by using 0.2N 30Hz vibrator for 20mins daily. It was found that there were 50% treatment time gained for the whole Invisalign treatment course with acceptable results.

CASE REPORT 1

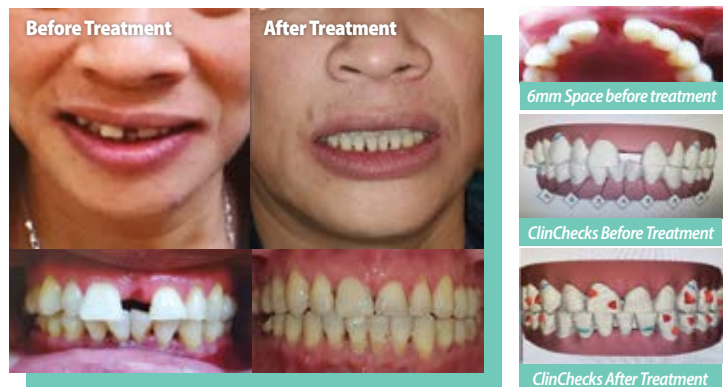
Mr YKC, aged 24 came in requesting correction of his teeth in order to take his wedding pictures scheduled for in about 1 years' time. The chief complaint was anterior cross bite with severe crowdings in both arches. Treatment plan was to remove all 4 first pre-molars and use Invisalign plus the use of vibrator (0.2N Force 30Hz) to accelerate the treatment time.

The Clincheck was set up followed extractions and the first set of aligners were 68 pairs and the patient was advised to wear 2 aligners per week (previously 1 aligner per week) with vibrator daily for 20 min. After 34 weeks, all the extractions spaces were closed but presented with posterior open bites and a second scan were done to order refinement aligners. The second set included 28 aligners and the patient completed the treatment in total time of 48 weeks. Radiographic findings were normal. The Vivera retainer was ordered and all attachment were removed just before he was able to take the wedding pictures with a perfect smile.



CASE REPORT 2

Mr JHC, age 50 suffered from supernumery central and tooth was removed due to mobility. The large 5mm diastima has caused concern and he was suggested to close the gap by Invisalign with use of 0.2N 30 Hz vibration daily for 20 min. The first 40 sets of aligners were finished in 20 weeks to close the space and refinements aligners were ordered to correct the root torque (26 aligners). The case was completed in total 33 weeks and the patient is happy with outcome and now on Vivera for retention phase. No Root resorptions were found in X-ray examinations.



Prolong tooth movement under constant pressure could cause root resorption. (Pandis 2008) During force application, a fluid movement in the periodontal ligament space occurred causing distortion of the matrix and the cells. Biomodulators activities were increased, these chemicals include: Prostaglandin E1, E2, Misoprostol, IgA, and Parathyroid hormones. (Pati A 2018)

Pati et al reported that injections of parathyroid hormone could act directly on osteoblasts and osteoclasts which could promote osteoblastogenesis and bone remodelling. Increased of Prostaglandins E2 were shown to increased during tooth movement to facilitate bone resorption. PGE1 were also shown to increased by mechanical stress to induce bone remodeling. (Pati)

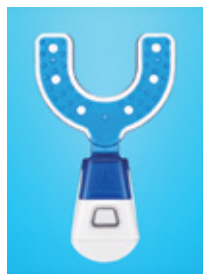
In the past, surgical procedures such as corticotomy were used to facilitate tooth movement. The post-operative complications and discomfort could be severe. Several other non-surgical stimuli were attempted including laser stimulation, electric current stimulation, pulsed electromagnetic fields and photobiomodulation were used. Among all these methods, vibration stimulation used mainly commer-

cially in recent years and were founded with promising results. They were used in experiment animals (Nishimura 2008) (Patil 2018) and few clinical reports had confirmed the positive effects of accelerated tooth movements by vibrators. (Bowmann 2014)

Recently, most dentists choose this non-invasive approach to accelerate tooth movement and this non-surgical method has gained wide popularity in the market of orthodontics.

Root resorption has caused concerns for prolonged tooth movement. Pavlin et al suggested there were significant enhancement in retraction velocity and showed that there were no canine root resorption after patients received vibration treatment. (Pavlin)

The popular brands of vibrator include USA made AcceleDent, VPro, and Koeran brand.



VPro Vibrator



AcceleDent Vibrator

Microvibration

The common brand of Orthodontic vibrator used in USA with FDA approval are AcceleDent and VPro. The machine is usually applied to patient by lightly biting forces on to the plastic plate for about 20 min a day. It will deliver a light force of 0.25 N with a vibrating frequency of 30Hz.

Alikhani et al studied the vibrators with a controlled group, they found that the mechanical vibrations could affect tooth movement time due to the induction of anabolic and catabolic effects on bone around the teeth. (Alikhani)

Liao founded that the Periodontal ligament responses were amplified due to the vibrations applied. The responses were recorded by computational stimulation, the volume-average hydrostatic stress in the periodontal ligament was computationally calculated to be at higher level with vibration when compared with the control group. (Liao)

Proffit studies on the principles of vibrators. They were used in traditional fixed orthodontic appliances and in removable Invisalign aligners. The treatment time were 20 min/day, with a vibration of 30 Hz and has force of 20 g. They could not confirm nor could they fully understand the exact mechanism of alveolar remodeling at that time but he had proposed two hypotheses: the first one related to piezoelectricity which could generated within the alveolar bone, and the second one related to the pressure-tension which established within the

periodontal ligament. (Proffit)

Grimm stated that: "Piezoelectricity is generated by orthodontic forces bending alveolar bone to produce an electrical charge which, in turn, induces an osteogenic response". (Grimm)

This is agreed by Shapiro and he recommended that orthodontic forces should not be continuous as the piezoelectric charges are only created when stress is applied and released. (Shapiro)

Kau concluded that mechanical vibrational appliance may be suitable for initiating these stress-induced charges as forces could be applied and released at a rapid rate. A number of cases were reported which support the use of micro-vibration to accelerate tooth movement. (Kau)

Leethanakul reported that there were increased in movements for patients using one side with a vibrating electric tooth brush head (125Hz) when compared with the control side. Gingival crevicular fluid (GCF) was collected from the mesial and distal sides of each canine at each monthly appointment. Interleukin-1 β levels were analyzed using an enzyme-linked immunosorbent assay. Canine movement was measured monthly and was found the movement were accelerated. (Leethanakul)

Despite Pavlin et al. found that AcceleDent could shorten the time of tooth movement when the technique were used during orthodontic treatment and there were increasing reports on the popular uses of the vibrating devices, Woodhouse, Miles et al, did not agreed with Pavlin and pointed out that vibration is not accelerating tooth movement significant with enough scientific data. Woodhouse compared the time for lower arch teeth alignment to the placement of the correction orthodontic wire in the extraction cases. They concluded that there were no evidence that could support the supplemental vibrational force can significantly increase the rate of lower arch tooth alignment or reduce the treatment time. (Miles)

At present, it is important to note that the non-surgical methods are associated with very-low quality evidence. More well-designed RCTs are encouraged to determine non-surgical interventions' safety and clinically-important reduction in the duration of orthodontic treatment.

Accelerated tooth movement can be achieved with vibration safely including canine retraction. No severe harmful effect such as root resorption and pain were reported by the latest available literature. It is important to point out that there are limitations of such methods and require patient's full co-operations to use it properly. A detailed comprehensive treatment options should be provided to the patients, so they have ability to understand the risks and complications involved. Patient should be able to make an informed choice about the most suitable methods for them in order to achieve the most satisfactory outcome of the treatment planned.

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Optic White Pro LED Light

- Patent Nth Light LED Technology developed with NASA
- 700+ light source
- Stable wavelength for blue light
- Rechargeable device



Optic White Overnight Serum

- 3% Hydrogen Peroxide
 - Enamel safe whitening formula
 - Instantly forms whitening film that coats the teeth
- No dripping, no discomfort.

3 simple steps for professional whitening at home



1. Apply Overnight Serum

Wipe your teeth dry after brushing with a dry tissue, then apply Optic White overnight serum on to the teeth



2. Activate the LED light

Once your teeth are covered with serum, insert LED light into your mouth and turn on the device and use for 10 minutes.



3. Sleep and Brush the next day

Optic White Pro LED Teeth Whitening Kit includes:
Overnight Serum 2.5mL x1/LED Light x1



NEW

Digital Retainer Program



Impression record will be stored for NEW replacement

+



6 months warranty



We now digitize all models under the digital retainer program

No need to retake impression / scan if a replacement is needed later

Utilizing a material with

- ✓ **Crack Resistance**
- ✓ **Impact Strength**
- ✓ **Stain Resistance**



EACH SET (Upper & Lower) comes with a Retainer MaX Case

24Hr **\$600**
Per Arch

72Hr **\$450**
Per Arch

MODERN PREMIUM **\$380**
Per Arch



We are offering patient leaflet & poster, contact your sales for getting them now!



Rugby Player

Unicorn

Free* Retainer Buddy
(Valued \$288)

* One free Retainer Buddy for the first 50 sets of submission in Hong Kong.
First Come First Serve



Contact us for more details
Phone call: +852 3766 0747
WhatsApp: +852 5574 7194

Modern Dental Laboratory Central Service Workflow



For Traditional
Impression Cases

1 Fill in Central Order Form



**Request Order Forms,
Boxes and Stickers,
please call +852 3766 0771**

2 Place Impressions and Order Form in the box



Modern Premium Box

OR



Modern Standard Box

Select Premium /
24Hr / 72Hr and paste
the sticker on the box

3 Request Pickup



+852 3766 0747



+852 5574 7194



For Digital Impression Cases:
Send the case to Modern Central via
scanner platform.
central@moderndentallab.com

Retainer MaX

Warranty Claim Process

1 Choose Data Preference

Previous Patient Record



Contact our CS with
Modern Code & Patient Name



+852 3766 0747



+852 5574 7194

OR

Take New Impressions



Mention "MaX Warranty" with
Modern Code & Patient Name
and send to Modern Central

2 Return Broken Retainers



Return the broken retainers
to Modern Central

3 Charge will be Waived



Credit Note will be issued once Modern
Central receives the broken retainers

Reconstructive Surgical Therapy Of A Peri-implantitis Related Intrabony Defect

Initial Situation

A 35-year-old male presented to a periodontal maintenance visit in 2020. The patient presented bleeding on probing and deep peri-implant pockets around implant #25. In addition, in the periapical x-ray, an osseous defect with an intrabony component was detected in the distal aspect of the implant (Fig. 1).



Dr. Erik Regidor Dr. Alberto Ortiz-Vigón

Presurgical Phase

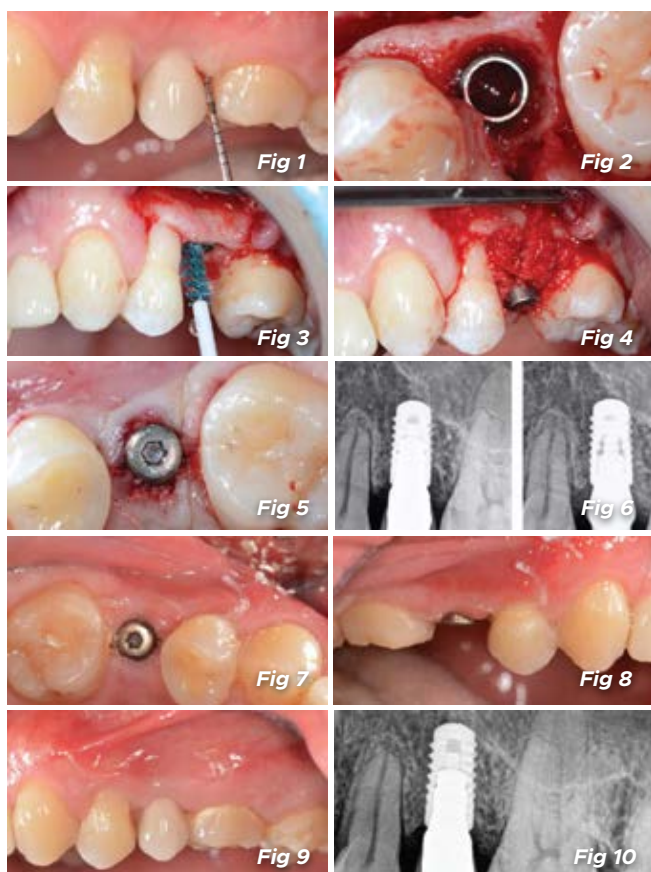
The patient received a full-mouth ultrasonic debridement and a manual curettage 4 weeks before the surgical protocol was performed. As a result, the patient reached full-mouth plaque and full-mouth bleeding scores below 20% before proceeding with the surgical treatment.

Surgical Phase

The surgical procedure was performed under local anesthesia (Lidocaine HCL 2% with 1:100,000 epinephrine), and the following surgical intervention was carried out after removing the implant-supported prosthesis:

An intra-sulcular incision at the affected implant was made using a 15C blade. The flap was extended mesially, with a vertical releasing beveled incision making one tooth away from the affected implant. After full-thickness flap elevation and removal of granulation tissue, the exposed implant threads were debrided using a chitosan brush (Labrida BioClean™, Straumann, Basel, Switzerland).

The intraosseous component was grafted with a collagenated xenograft (Straumann® XenoFlex, Institut Straumann AG, Basel, Switzerland). The graft was adapted to the defect morphology. Primary wound closure was achieved using internal vertical mattress sutures in mesial and distal, and the gingival recession of #24 was covered, advancing the flap coronally. (Fig. 2-6)



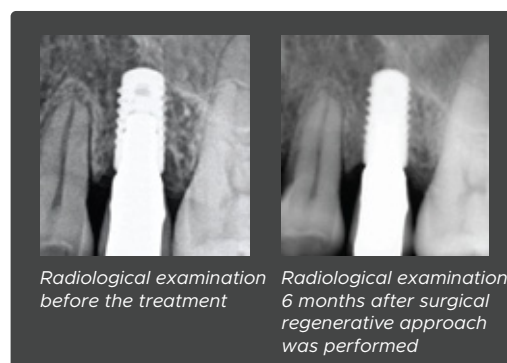
Treatment Outcome

After 2 weeks, primary wound closure was observed, and therefore, sutures were removed, and the implant-supported crown was repositioned. (Fig. 7-8)

Moreover, at 6 months follow-up, the radiological and clinical examination indicated a successful bone regeneration around the implant. (Fig. 9-10)

Conclusions

- The proposed implant surface decontamination with a chitosan brush seems to be safe and efficient.
- The proposed surgical reconstructive approach using a collagenated xenograft may offer a successful therapeutic option to reconstruct intrabony peri-implant defects.





LABRIDA

Manage Peri-Implantitis Today

37

The Clinical Challenge

Peri-implantitis

- 20 – 40% of 70 million patients will experience peri-implantitis 5-10 years after the surgery
- Established peri-implantitis is complex, costly and difficult to handle

Periodontitis

- The 6th most common disease in the world. There is 40% of the grown-up population suffer from periodontitis
- May lead to tooth loss & oral debilitation

Labrida BioClean®

Chitosan Fibers

Optimal properties for implant and dental supportive care

Increased Infection Control

It is designed for both surgical and non-surgical debridement

Increased Patient Comfort & Compliance

- Can be used by all dental professionals
- Low pain
- The need for anesthesia is limited

Gentle And Painless Treatment

- A gentle and efficient way of maintaining dental implants and teeth
- Preventing disease progression

The Labrida Bioclean® Solution

For Patients

- Reduced inflammation
- Extended lifespan of the implant and the affected tooth
- Gentle treatment of implants, teeth and surrounding tissue
- Less pain and complication

For Clinicians

- Good clinical efficacy documented in clinical studies
- Safe and easy to use
- A gentle treatment that provides increased patient co-operation and more patients continuing in the recall system

Exclusive offer from Peak Dental Solutions HK:



BUY 2 Boxes
Labrida BioClean®

FREE
1 Box

 **straumann**

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Step 2



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for Eligible Miles

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THANK YOU

for reading the 3rd edition of the Dental Diaries. We hope you enjoyed your time with us. Please send us any valuable **advice, feedback or enquiries** via the following contact:
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Interested please contact Ms. Wong at 2810 0573 or apply to esec@bjdental.com.

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Interested parties please email your full resume with your last and expected salary to tonytsoi@ehealthcare.com or WhatsApp 6655 6953.

Part-time Dentists are invited to join our busy clinic in Tuen mun. Well- equipped clinics, huge patient pool, please WhatsApp 5328 1449 Ms Chan or email to onedentalcliniclab@gmail.com.



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EC Healthcare is seeking full-time Dental Hygienist.

Interested parties please email your full resume with your last and expected salary to recruit@ehealthcare.com or WhatsApp 6655 6953.



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Concord Dental Care Centre is seeking DSA.

Interested parties please email to admin@conrad-dental.com / WhatsApp 6159 5770 / Call 2154 2221.

醫思健康誠聘牙科助護, 主要負責接待; 接聽電話; 協助醫生完成簡單診症工作及處理行政工作。

有興趣者請發送您的完整簡歷以及最後和期望的薪酬至 recruit@ehealthcare.com 或 WhatsApp 6655 6953。

鄧德根口腔頰面外科專科醫生中環診所誠聘全職牙醫助護, 主要負責電話預約及使用Clinic Solution; 協助醫生臨床工作及儀器消毒等。

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Quality HealthCare is seeking a full-time Dental Hygienist (Lantau Island / TST).

Interested parties please email your resume with your expected salary to hrd@qhms.com or WhatsApp 6110 7628.

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有意應徵者請電郵你的履歷及要求薪金至 hadmin-nurse@townhealth.com 或 WhatsApp 至 9830 4733。

New graduates are welcome. PT/FT please send your CV to onedentalcliniclab@gmail.com or WhatsApp 5328 1449 Ms Chan.

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