

Issue 002 | April 2022

 **DENTAL
DIARIES**

**QUARTERLY
MAGAZINE**

HONG KONG & MACAU EDITION

2022

MAIN STORY

Computer Assisted Implant Surgery in Clinical Practice

Lifestyle

Domain H. William Harlan introduces "The Mascot" in Hong Kong with Omtis Fine Wines

Enthusiasm For Cars

ITI DAY IN HKIDEAS

Case Studies

" PhotoBioModulation
An Updated Literature
Review with Relevant
Case Report

"

" Esthetic Challenges
of Immediate Implant
Placement and
Provisionalisation
of Maxillary Anterior
Single Implants

"



*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!

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Dental Diaries?**
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ITI DAY IN HKIDEAS

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Lecture + Hands-on

**Perfecting Crown & Bridge Protocol for the Daily Practice:
a Magic Play under Kois' Perspectives**

Dr. Liu Kwong Shing, Jerry



DATE
08th & 15th JUL 2022



TIME
9:30AM - 6:30PM



Learn More

Fee: HKD10,500



Lecture + Hands-on

**Complete denture from Impossible to
achievable & essential**

Dr. Annie Wan



DATE
22nd & 29th JUL 2022



TIME
9:30AM - 6:00PM



Learn More

Fee: HKD8,500



Webinar

**Utilizing the Digital Workflow for Immediate
Provisionalization and Final Restoration**

Dr. Ira Langstein



DATE
11th MAY 2022



TIME
7:00 AM

Fee: Free of charge



Learn More



Webinar

**The Surgical Digital workflow: From Data
Acquisition to Execution**

Dr. Acela Martinez



DATE
10th AUG 2022



TIME
7:00 AM

Fee: Free of charge



Learn More

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Clear. Simple. Friendly.



Dr. Daniel Neves



Dr. Gabriel Dolci

ClearCorrect is on a mission to revolutionize the way how we educate our providers. PUSH Orthodontics is an international dental group dedicated to providing simple to comprehensive courses focused on digital orthodontics and aesthetic dentistry. The collaboration provides a proven peer-to-peer community for aligner education.

Online Hands-on Course

ClearCorrect Elevate Course

An intermediate course for doctors seeking to treat more involved cases

Module 1

22nd Mar 2022 | 7:00 PM – 9:00 PM

Module 2

12th Apr 2022 | 7:00 PM – 9:00 PM



Learn More

Fee: Free of charge

Online Hands-on Course

ClearCorrect Aspire Course

An advanced course for experienced doctors treating complex cases

Module 1

26th Apr 2022 | 7:00 PM – 9:00 PM

Module 2

10th May 2022 | 7:00 PM – 9:00 PM



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AD





THE 3-STEP CLEAR ALIGNER SOLUTION

The TrioClear™ aligners are nearly invisible and straighten teeth by using multiple sets of clear aligners which are custom-made to gradually move teeth step by step to the ideal position. The treatment is proven to be effective to treat cases from minor teeth straightening to moderate malocclusion.



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TrioClear's workflow is **designed specifically for Hong Kong dentists**. Our **logistics service for shipping physical impressions and accessories are free**, and there is **no additional charge for refinement** as long as the approval plan doesn't change.



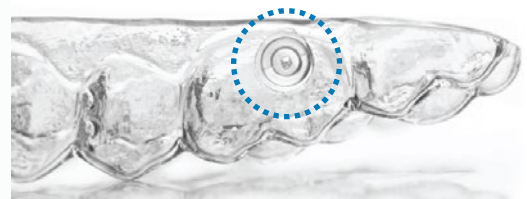
3-Step Aligner BioProgressive Force

Patients will gradually and continuously improve their teeth by wearing **3 different clear aligners** within each weekly interval. **From SOFT, to MEDIUM to HARD**, the varying levels of thickness shift the teeth and help patients achieve their desired smile. Patients have reported a very comfortable transition for each tray due to the **slow incremental thickness increase**.



Increased Gingival Coverage

Greater gingival coverage provides **better retention and adaptation** than aligners that follow the scallop of the teeth. With the increased coverage, the aligners are able to **exert controlled movement forces on teeth** only with limited numbers of attachments, therefore **saving chair time** and **increasing aesthetics**. This also allows space for addition of modifications such as button integration directly on the aligners



TREATMENT OPTIONS

NEW

Simple

For restorative
& relapse

1 Cycle (3 Aligners)

Touch-Up*

For mild crowding
& spacing

6-9 Cycles (18-27 Aligners)

Unlimited Refinement

NEW

Touch-Up Plus*

For AP correction &
moderate protrusive

10-14 Cycles (30-42 Aligners)

Unlimited Refinement

Complete*

For severe dental
problems
& Class II / Class III

Aligners - Unlimited

Unlimited Refinement

*Unlimited refinement as long as the approved plan does not change.

Computer Assisted Implant Surgery in Clinical Practice

What is the value of accuracy?

Accurate implant placement was the primary and most important advantage reported for CAIS. To measure the extent of this accuracy, researchers have used the 3-dimensional deviation from the planned position at the implant platform and apex and the deviation in the angle (Figure 1). Initial research pointed out to a significant increase in accuracy when CAIS was used, with the deviation reduced to roughly half of what it was in freehand implant placement. An earlier systematic review from the ITI Consensus Workshop of 2017, found that static CAIS would result to deviation of 1.2mm at implant platform on average (1), suggesting that a safety margin of 2mm is to be considered when we use this technology. Although certainly a great development, is this something that could transform your practice? Many colleagues remained skeptical, especially those with long experience. After all, gadgets are always cool, but we've been placing implants with great success already. Is it worth all additional investment and effort?

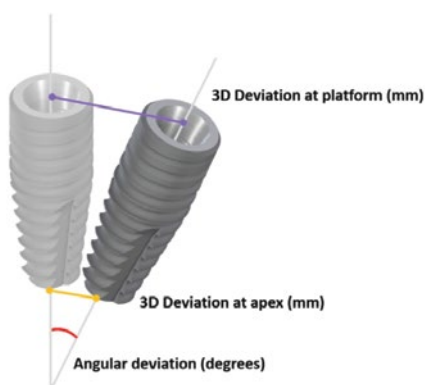


Figure 1. Typical parameters measured to assess accuracy of implant placement: 3D deviation at platform and apex and angular deviation.

Shifting Paradigms – Shifting Needs

Before we start discussing about accuracy there is one important question each should ask oneself: “how critical is to achieve precisely my planned position?” The answer might be different for each patient case and was different



Dr. Nikos Mattheos



Dr. James Chow



Dr. Atiphan Pimkhaokam

Computer Assisted Implant Surgery is increasingly popular, with almost every implant system racing to deliver the most reliable technology and protocols. Either as static or dynamic, CAIS promises unprecedented accuracy in implant placement and evidence now shows that it delivers. But is it just about accuracy? How reliable is this technology and how important is a millimetre after all? Is it worth the cost and trouble? Can this technology transform the way we practice implant dentistry, or will it remain a premium gadget mainly targeting complex cases in ‘up-market’ clinics?

These were some of our genuine questions when we embarked in a long project assessing computer assisted surgical technology in practice. If you share these questions, then the article that follows is for you!

through the different ages in the evolution of implant dentistry. In the earlier decades of implant dentistry, when the dominant paradigm was the seek for osseointegration, the placement was driven by the anatomy. Exposing an edentulous jaw, the surgeon would determine the final position based on his assessment of the sites that could offer best conditions for osseointegration. Then, several months later someone would come and join all the implants – wherever placed – under one full-arch reconstruction. As you can understand, reconstructions varied significantly, the plan was only approximate – at least by today's standards – deviations of implant position could extend to centimetres, while even the number of implants could change intraoperatively. Once replacement of single units became established, the margin of acceptable deviation was narrowed, and the implant placement became increasingly driven by the prosthetic needs. The development however of more sophisticated prosthodontics, (abutment dimensions and angles, retention methods) allowed still a significant “leeway” for implant positioning. Today, implant dentistry has completely departed from the older paradigm. Modern surfaces and implant design, as well as bone regeneration techniques have made osteointegration to be no longer the key

determinant. The guiding paradigm today in implant dentistry is this of designing a new organ, which will serve function and aesthetics but also where mechanical components, human tissue and bacteria can reach a long term balance of health (2). This requires a lot of attention to be given to the proper design of the prosthesis, the shape and morphology of the Implant Supracrestal Complex and finally defining the single optimal implant position and type. Even more, the rising concept of immediacy, with an immediate temporary or loaded prosthesis adds critical importance to the implant position. Even a small deviation from the planned position can be detrimental to immediate loading when a pre-fabricated prosthesis is used. So ask yourself, how important is it to reach the planned position with high accuracy? If you perceive the implant-prosthesis complex as one system in close interrelation with the tissue, the answer is that implant position is always critical. Today, we always need to have defined the optimal implant position. The tolerance for deviation and consequently the need for accuracy might differ, depending on the site and the treatment plan. In the case of a single posterior implant to be restored conventionally, we might be able to get away with some significant deviation through "damage-control" prosthodontics. On the other extreme, in an anterior aesthetic case or a full arch planned for immediate restoration, even a small deviation would jeopardise the whole plan. And yes, 1 mm can be the game changer indeed in many cases.

CAIS Technology

The CAIS tree started initially with two main approaches, the "static" or "guided" and the "dynamic" or "real time navigation". As with everything new, the terminology is a bit confusing at times, in particular in studies comparing CAIS with conventional placement. So in some studies you will see the conventional placement to be reported as "freehand", but that will be misleading as the placement with real time navigation is also "freehand". In other studies the conventional placement was referred to as "mental" guided, but that is misleading too, as mental capacity should be behind any kind of placement. On top of that, with the meaning of "mental" in colloquial American English and with the mental pressure we have all been subjected to under the years of Covid-19, this term is not particularly attractive. So, to streamline our terms a bit, CAIS implies the use of digital aids or products during the surgical implant placement. It can be static, where the surgeon places the implant in a pre-determined position by means of a surgical guide, or it can be dynamic, (which is actually freehand), where the surgeon places the implant by means of real time projection of the osteotomy on a screen, in relation to a pre-identified position. These two technological principles have now evolved and diversified so much, that we can describe a whole "technology tree" with many branches already.

The Static CAIS Technology

The main idea behind the static CAIS is rather simple: create an acrylic "template", which will guide our drills to the perfect osteotomy and then place the implant accordingly. It is based therefore on a 3D printed surgical guide with "sleeves", which allow the placement of the drills controlling angle and position and "stops" to control the depth. The guide can be supported on teeth, on oral mucosa, on the underlying bone through mini screws or a combination of the previous. It can be a single piece guide, or "stackable" in order to cover several procedures, such as for example a possible osteotomy prior to implant placement or a lateral sinus floor augmentation. But this is about where the principle ends and the application starts! Today almost every major implant brand has its own guided surgery software, instruments and overall protocol (Figure 2).

STATIC CAIS GUIDE SYSTEMS				
Guidance	interlocking		no interlocking	
				
Guidance	sleeve in sleeve	mounted sleeve-on-drill	integrated sleeve-on-drill	
Sleeves	no sleeves (acrylic)	Titanium	Zirconia	
Design	teeth supported	mucosa supported	bone supported (fixation)	hybrid
	full coverage	partial coverage		
Production	3D printed (acrylic)	milled (PMMA)		
Software	CoDiagnostix	Nobel Clinician	BlueSky Bio	Implant Studio Exocad Romexis

Figure 2. The static CAIS has evolved to include many different guide and drill designs, surgical protocols and sequences. It is now evident that it can result in significant differences in terms of precision and accuracy.

The differences can be significant and this diversity is not based on evidence, but rather reflects each company's philosophy, design, historical features and insider-view on implant surgery. Does it really matter? Well, evidence shows that it does. In a recent study we compared the precision of implant placement with 5 different commonly available guide designs and guided surgery configurations (3). The results showed significant differences, with the "sleeve in sleeve" guides achieving almost half the deviation than some of the "mounted" or "integrated" sleeve guides (Figure 2). At the same time, accuracy might be not the only parametre that is clinically important in a system. Ease of use by the surgeon, reliability of the full workflow, availability of a wide array of drills, sizes and components, durability and costs are also to be accounted for. As we begin to understand the implication of design parametres through proper research, guided surgery kits in the future might start to converge towards the best practices or principles which deliver the most. For now however, be mindful, there is not one such think as "static guided surgery protocol", despite what some systematic reviews will try to convince you. On the contrary, there are many different protocols, with significant differences in results, potential and limitations. Choose wisely!

The Dynamic CAIS Technology

The dynamic CAIS systems are based on a principle which reminds the GPS navigation. In the first generation systems, a set of stereoscopic cameras was constantly recording the position of a set of trackers (called fiducial markers) on the patient and the surgeons handpiece. The software then calculated the exact location of the patient and the handpiece in space and projected the drills on the actual patient's CBCT in real time, through a screen (Figure 3). Of course, this only made sense if the software could maintain at all times a proper spatial alignment of the patient and the drills. To achieve this, the patient had to wear a custom-made split during the CBCT and during surgery, but also sensitive registration and calibration procedures were required before the surgery. The first and second generation of dynamic systems utilised many components and required rather big areas of fiducial markers (Figure 3). Like in static CAIS also here, there is not a uniform technology and many companies have developed different systems. In this way, there has been systems with 2, 3 or 4 tracking cameras, different size and design of fiducial markers and calibration procedures, as well as different planning and visualization software. There is very little reported in research with regards to comparisons on different dynamic CAIS systems, so one can only try to assess systems performance based on their reported specifications.



Figure 3. Surgical setup of a second generation Dynamic CAIS System (IRIS 100, EPED, Taiwan). Notice the two stereoscopic cameras opposing the surgeon, the navigation monitors, the handpiece and mouth splint with the fiducial markers and the black diamond shape calibration instrument.

The third generation of navigation systems has reduced the need of an intraoperative splint for the patient and instead aligns the surgical visualization via an algorithm directly with the CBCT, using distinct anatomical landmarks on teeth. In general, the trend has been to reduce the number of components as well as streamline the design to smaller and easier to use. One of the latest developments is the addition of augmented reality glasses, which has made the need for chairside operating monitor redundant. This is a major improvement for both speed and ergonomics, as the surgeon has now the navigation screen projected in the upper segment of his view and can perform the surgery without interrupting optical contact with the surgical field. Combining the augmented reality glasses however with surgical loops and light might be a challenge. Learning to operate with all these gadgets mounted and a 3-layer field of vision would require some learning and adaptation (Figure 4).



Figure 4. Augmented reality glasses are a great addition to dynamic CAIS systems, and possibly the coolest addition in 3rd generation systems. Combining them with operative loupes could be a challenge and require some learning curve! The glasses occupy the upper part of the vision field, so as to not interfere with the direct vision of the surgical procedure. Surgical loupes are aligned to the lower segment, thus allowing the centre for direct vision of the surgical field.

Precision and Accuracy

As the CAIS systems were initially produced to help clinicians transfer the planned implant position in the mouth, it is not surprising that the first objective of research was to test them for Precision and Accuracy. In daily communication these two terms are often used interchangeably, but when it comes to scientific use, they imply two different qualities (Figure 5). Accuracy will assess how close your placement will be to your planned optimal position. Precision on the other hand will assess how reproducible is the process, that means if you repeat the same placement many times, how close will each placement be to the previous ones. In practical terms low low precision but high accuracy will reveal some systemic error, for example some error in calibration resulting in the misplacement of the drill position in the software projection.

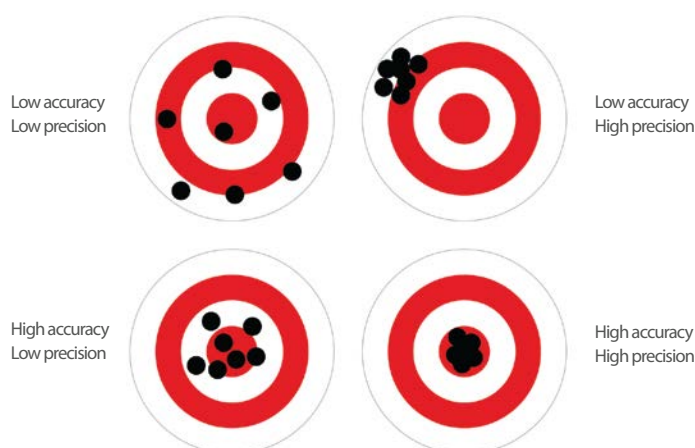


Figure 5. Schematic representation of the difference between Accuracy and Precision in CAIS.

This misplacement will be the same for every drill, resulting in a corresponding misplacement of the implant.

To test accuracy, we would typically rely on clinical studies, which are the most relevant. However, as in clinical studies we can only place each implant once, to assess precision we would need simulation studies (3), where the implant is placed in multiple identical models under the same conditions and by the same operator.

Before we estimate the accuracy of CAIS however, we will need to note that the actual guided surgery is only one final step of a long sequence in a digital workflow. This workflow includes a lot of steps, each of them with potential for errors. First, we rely on a CBCT. Unlike what you might think, the 3D image of the CBCT software we work with in our computer screens is not a radiographic image. It is an algorithmic reconstruction of many radiographic images. A periapical radiograph taken with the parallel cone is a true radiograph, as the beam of rays is what actually "writes" on the radiosensitive plate. Any distortion in size is directed by the laws of physics. In the case of a CBCT however, a large number of radiographs is "sutured" together in a seemingly 3D structure by a mathematical algorithm. Every algorithm will use at certain points some "imagination" to fill in the gaps between the radiographs, a process which is a calculated "approximation" and might not always be absolutely loyal to the true anatomy. Adding to that some well-known limitations due to position of the beam, rotation, distances from the source of the rays and more, one can easily understand that although a CBCT is a highly accurate

reconstruction for measurements, there is an inevitable error which might differ from machine to machine, day to day and even patient to patient. Some studies have found that linear measurements on well calibrated CBCT can have as much as 0.6mm inaccuracy from the true anatomy (4), while volumetric measurements can deviate as much as 4.4% (5). Importing the DICOM file to the treatment planning software invites one more algorithm in the party. Then transposing the STL file from the optical scan and the essential rendering has the potential to further influence dimensions. Finally, 3D printing of a surgical guide is a workflow step with potential to introduce some more distortion.

Conclusively, by the time we are about to use our CAIS system to place the implant, there is already some accumulated error from the workflow, that even if the CAIS was to be perfect, we would still observe some deviation from the planned position. How much of the deviation is attributed to the actual CAIS and how much to each of the previous workflow steps is next to impossible to find, especially considering that each software algorithm is a "black box" for us clinicians and researchers. We just have to bear in mind that every time we compare two CAIS systems, we do not compare just two drilling protocols. We essentially compare two complete workflows, including the respective software and all algorithms used. At the same time, it becomes apparent that comparing accuracy estimates between different CAIS systems is meaningful when the workflow is identical, which includes the CBCT and planning software, as well as the operators and clinical setup.

Accuracy of CAIS Systems

Back to the main point now: how accurate is implant placement when we use CAIS?

To answer this allow me to discuss the results we have accumulated through a major CAIS research project in our clinic at Chulalongkorn University in the past 3 years (3,6-11). This project has by now involved more than 200 patients and included research protocols in many different clinical scenarios. The strength of this project is that it allows us to shape a comprehensive view of the effectiveness of CAIS, while limiting as much as possible the variation of the workflow error. A typical systematic review will compile numbers from many published studies, e.g. 2 studies from centre A on single gaps and 1 study from centres B and C each on fully edentulous patients. It would be very difficult to draw any valid conclusions on the accuracy of CAIS in single gaps as opposed to fully edentulous, because the 3 studies essentially report the results of 3 different workflows. The three centres use a different CBCT machine, a different planning software and in the case of static CAIS they might be using different printers and guided surgery implant systems. With all these different parameters contributing differently to the potential errors, it is impossible to conclude

what is the impact of the clinical condition (single gap vs fully edentulous) in the finally reported accuracy numbers.

By standardizing the studies however and using the same technology and software, the same operators, clinic set up, as well as the same patient pool like we have done in this project, we can at least ensure that the workflow error is similar in all cases thus the observed differences can be attributed to the clinical conditions we investigate.

And at last, time to talk some numbers, which you can see in Figure 6. The table is compiled out of a series of published studies in our centre, where all cases were treated by the same team, using the same CBCT machine as well as planning software and implant system. Streamlining the workflow, one can now see a clear trend with the accuracy of CAIS being closer to freehand at single gaps, while the deviation drastically increases as we move to partially and fully edentulous patients. The deviation also trends to be slightly higher in dynamic than static guided when we are dealing with partially and fully edentulous cases, but at the same time both static and dynamic CAIS perform increasingly (and significantly) better than freehand placement, as complexity increases.

With regards to precision now, one would have to utilize simulation studies analysing the distribution of the deviations in repeated implant placement using the same workflow as we used in the clinical studies above. The results both for static and dynamic CAIS speak of high precision with little indication of any systemic deviation, other than possibly a minor influence of ergonomics and the optical field of the operator for some specific anatomic locations, which might be patient specific and vary between static and dynamic CAIS (Figure 9).

Nevertheless, although precision and accuracy remain the first and primary research focus, they are just the “tip of the iceberg” when it comes to utilizing CAIS. Other clinical outcomes are also very important such as implant stability, complication rates, invasiveness. Decision making also relies on the overall efficiency of each method, cost/effectiveness, time allocation, initial investment and not to forget the importance of the patients’ own experience, understanding and perceptions. The picture is also completed by anatomic conditions and the treatment objectives, which might also play a critical role in determining the technology that works best in each case. Finally, combining all these factors we can produce a decision-making tree helping us to assess the individual patient and select the most appropriate CAIS protocol where it offers the greatest advantage. But if you are interested to hear more on all these, we will have to return with a second article in a future issue!

Accuracy	Conventional Freehand			Dynamic Navigation			Static Guided		
	single	partial	edentulous	single	partial	edentulous	single	partial	edentulous
3D deviation at implant Platform (mean/SD in mm)	1.3 (0.7)		3.4 (2)	1 (0.4)	1.24 (0.3)	1.7 (0.4)	0.9 (0.8)	1.04 (0.6)	1.4 (0.7)
3D deviation at implant apex (mean/SD in mm)	2.2 (1.2)		3.6 (2)	1.2 (0.5)	1.5 (0.5)	1.8 (0.4)	1.2 (0.9)	1.5 (0.7)	1.6 (0.7)
Angular deviation of the implant axis (mean/SD degrees)	7 (7)		10 (4.9)	3 (1.3)	3.7 (1.8)	5.7 (2)	2.8 (2.6)	4 (1.6)	4.9 (2.1)




Kiatkroekkrai et al, IJOMS 2019
 Smitkarn et al, JCP 2019
 Kaewsiri et al, COIR 2019
 Yimarj et al, CIDRR 2020

Sittikornpaiboon et al, CIDRR 2021
 Engkawong et al, CIDRR 2021
 Jaemsuwan et al, IJOMS 2022

Figure 6. Accuracy of conventional freehand, dynamic and static CAIS implant placement, as based on a series of randomized clinical trials at Chulalongkorn University (4,7-12). The first row is 3D deviation at implant Platform (mean/SD in mm), second at implant apex and third the angular deviation of the implant axis (mean/SD degrees).

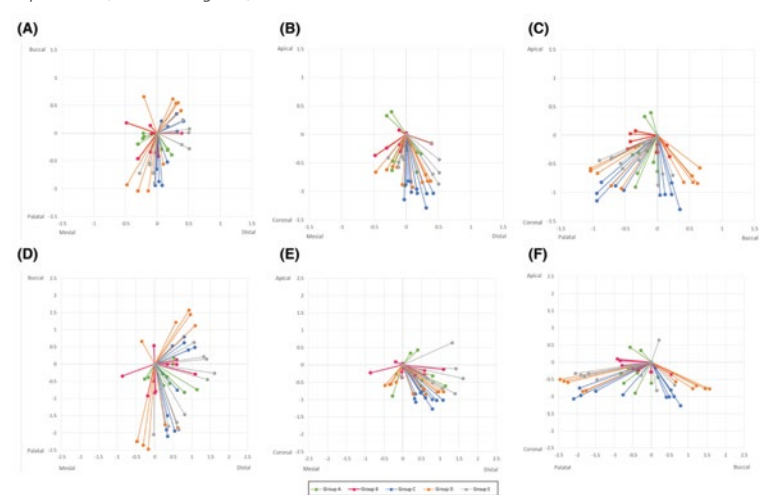


Figure 7. Diagram of precision after repeated implant placement in identical models with 5 different static CAIS systems (4). At the centre of the square is the ideal position “0” and each dot represents an implant placement. One can spot minor “bias”, with the dots clustering more towards one direction, rather than being randomly distributed around the point 0. Such clustering can occur due to each system characteristics, but also due to operator’s position, field of view and ergonomics related to the surgical site.



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Domain H. William Harlan introduces “The Mascot” in Hong Kong with Omtis Fine Wines

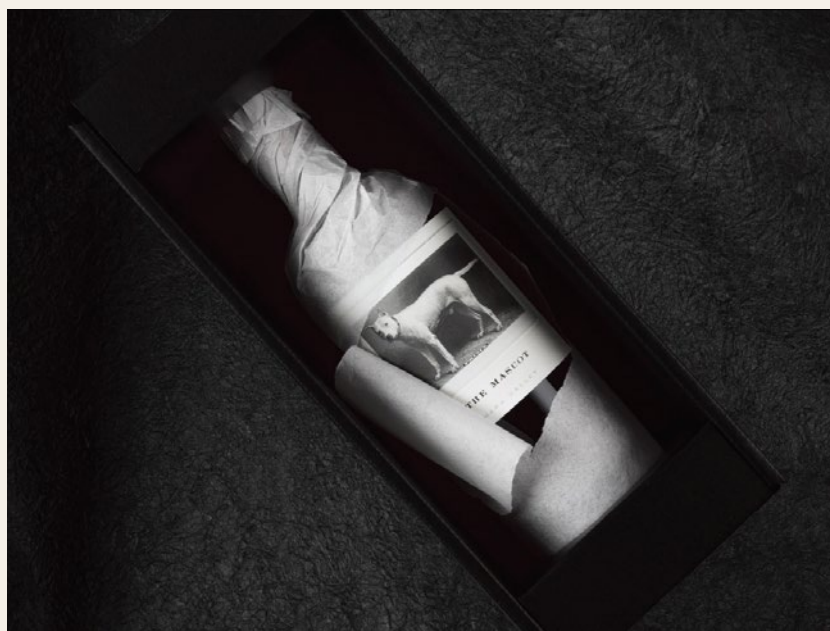
The Mascot, founded by Will Harlan, is making its debut in Hong Kong with Omtis Fine Wines, one of the most established family-owned wine merchants in Hong Kong, with over 100 years of experience delivering luxury in Asia.

A Youthful Expression of the “Grands Vins”

The Mascot is a Napa Valley Cabernet Sauvignon made from the younger vines of Harlan Estate, BOND, and Promontory—the three hillside winegrowing estates that comprise Domain H. William Harlan. The Mascot shares the same meticulous winegrowing practices of the estate wines, remaining true to its pedigree while offering a youthful promise for the future.

From an Experiment to the birth of New Wine

“The Mascot began as an experimental project, born of the desire to create a wine to share with friends,” said Will Harlan. He persuaded his family and the winegrowing teams to lend a few barrels of wine from the young vines of the three “parent” properties, and began to explore his own blend—creating a small quantity of the first official vintage in 2008—just enough to share among the family and with friends. Since then, Will has been working at the family domain with his winemaking teams, led by Cory Emptying, to weave together this charming harmony of energy and depth; expressive and approachable early in its life, The Mascot will age for decades if given the opportunity.



The Next Generations of Two Families

As the next generation at the helm of their respective family businesses, Will Harlan, MD of Domain H. William Harlan, and Philippe Bera, CEO of Omtis Fine Wines, share a long-term vision and philosophy. “My family started the business in Asia in 1919, from running cinemas, to distributing luxury watches, and now to fine wine. Always evolving, 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 the organization. This, we believe, coincides, with Will’s journey in his family domain and his Mascot project. We are very glad to be representing The Mascot in Hong Kong, a wine with absolute potential,” said Philippe Bera.

“As long as I can remember, I’ve heard my father’s 200-year plan. I am grateful for the opportunity now to lead the family winegrowing domain, and feel excited for our future. There is so much potential to understand our land better—and, through relationships such as we have with our friends at Omtis, to share the fruits of our endeavors with an international audience of patrons,” said Will Harlan.

From the Land to the Wine

The Mascot is produced from the younger vines of its three parent properties (Harlan Estate, BOND, and Promontory) in the Napa Valley—the rarest and finest sites, which the Harlan family has spent the past 40 years identifying. The vines that contribute to The Mascot average from 5 to 12 years of age. Depending on the vintage, The Mascot is composed of 85 to 95% Cabernet Sauvignon, along with small quantities of Cabernet Franc, Merlot, and Petit Verdot. The winemaking teams evaluate the young-vine lots at the blending table between 6 and 14 months after fermentation, selecting the finest for inclusion in The Mascot. In total, The Mascot is aged in barrel for nearly three years prior to bottling and another 12 months in bottle prior to release.

The Mascot in Hong Kong

The Mascot 2017 is now available on Omtis Fine Wines website (www.omtis-finewines.com). If you wish to be included in the Omtis mailing list for future allocations of the Mascot in Hong Kong, please register for an Omtis Account via www.omtisfinewines.com/user/register. The wines are also available in selected private members clubs, 5-star hotels and restaurants including but not limited to the Grand Hyatt Hong Kong, the Landmark Mandarin Oriental, and Otto E Mezzo 8½ Bombana.



For enquiries:

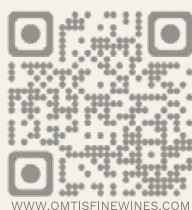
T : +852 2333 0241
M : +852 2363 6014
E : sales@omtis.com



Appendix I – Tasting Note

The Mascot 2017

Vintage 2017 proved to be one of those seasons that tests the mettle of both the winegrowing team and the vines. The exuberance of early spring was briefly disrupted by hailstorms, followed by heat waves that bracketed the summer months, elevating ripeness in the fruit. Despite these events, we took a calculated risk by waiting. Decades spent working these lands had encouraged us to exercise restraint, allowing the vines—even the young ones—to rely, wherever possible, on their own accumulated wisdom. Discipline rewarded us: as temperatures normalized, sugars rebalanced, acidity held, and harvest began not long thereafter. We are particularly fortunate to have produced The Mascot from fruit brought in before wildfires began in autumn. These adversities seem to have heightened the character of the wine, which emerged from the challenges with purity and poise—a testament to the pedigree of the sites themselves. The growing season's relative warmth is absent in the glass, replaced by freshness and a piquant tension. The nose draws forward notes of red fruit and elements—earth, warm spice, leather—often deferred to the finish. Lithesome tannins and vibrant acidity attend a crystalline structure that is finely wrought and radiantly transparent.



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DENTALDIARIES

Recent Study

According to a study led by the University of Birmingham, patients with a history of periodontal gum disease are at increased risk of developing illnesses such as mental illness and heart conditions. The expert team studied records of 64,379 patients who had a GP-inputted recorded history of periodontal disease, including gingivitis and periodontitis. The team discovered that those patients with a recorded history of periodontal disease were more likely to go on and be diagnosed with one of these additional conditions over an average of 3-year, compared to those in the cohort without periodontal disease at the beginning of the research. Study results indicated that patients with a history of periodontal disease at the start of the study had a higher likelihood of developing periodontitis, the increased risk of developing mental ill-health was 37%, while the risk of developing autoimmune disease was raised by 33%, and the risk of developing cardiovascular disease was increased by 18%, and the risk of having a cardiometabolic disorder was increased by 7%.

New biocompatible resins

3D-printing company Formlabs has unveiled two new biocompatible resins, namely BioMed White and BioMed Black. The new resins were developed to diversify the medical resins available to the health care community and are designed for applications for which opaque materials are preferred for functionality or esthetic quality. They will provide esthetics that enable superior patient outcomes by providing access to improved ergonomics through fast medical device iterations, and reliable surgical planning. In a press release, Director of Medical Market Development Gaurav Manchanda said, "The addition of these resins to Formlabs' materials library will allow for greater flexibility in design and function and can be used in a variety of applications ranging from medical device manufacturing, biopharmaceutical processing, and consumer goods such as medical device components, wearables, and custom dental appliances."

Dental Industry News

Orthodontic Trend

John Nabors, VP of StarAligners shares his insights into the latest orthodontic trends:

- Trend 1: More patients with mild to moderate aligner cases - In particular, patients who have previously worn braces are more likely to correct slight teeth misalignments.
- Trend 2: More products focusing on teeth whitening - Due to social media and constant visibility, more attention has been paid to treatments for whitening teeth.
- Trend 3: New LED treatments for oral therapy - Devices that use red or infrared light to increase gum circulation and improve gum health will become more common, because they are easy to use and beneficial to long-term gum health.
- Trend 4: Increase in adults seeking orthodontic care - The Zoom effect of staring at one's face and in turn, teeth all day, intensified these self-esteem issues and contributed to the rise of cosmetic cases in orthodontic care.

HELPFUL TIPS!



Disinfection levels and molding materials

Type of Disinfection	Disinfectant	Molding Material	Exposure Time
High level	+ Glutaraldehyde (2%)	Zinc enolic paste	Spray and store for 10 min or soak for 10 min
		Polysulfides	
		Silicones	
		Alginate and polyether	Spray and store for 10 min.
Intermediate level	+ Sodium hypochlorite (0.5% or 200-5000PPM) + Iodoforms (1-2%) + Phenols (1-3%) + Chlorhexidine (2-4%) + Alcohol (70%)	Zinc enolic paste	Spray and store for 10 min or soak for 10 min
		Polysulfides	
		Silicones	
		Alginate and polyether	Spray and store for 10 min.
Low Level	+ quaternary ammonia + simple phenolic detergents	Zinc enolic paste	Spray and store for 10 min or soak for 10 min
		Polysulfides	
		Silicones	
		Alginate and polyether	Spray and store for 10 min.



COVID-19
CORONAVIRUS
DISEASE 2019 (COVID-19)

INFORMATION BY **straumann**group

Ebook: [BIOSAFETY AND DISINFECTION OF IMPRESSION MATERIALS FOR PROFESSIONALS IN PROSTHETIC DENTISTRY](#)
(Lab Technicians and Dental Surgeons) 2020 p.7

NEW

TREATMENT OPTION

RECOMMEND

When starting a new case, instead of specifying which treatment option (Ex. Touch-up plus), TrioClear designs first and comes back with the best option for you!



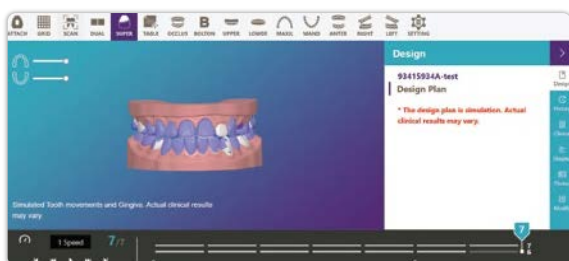
Turn Off Email Notification

Option to turn all or some emails notifications off.

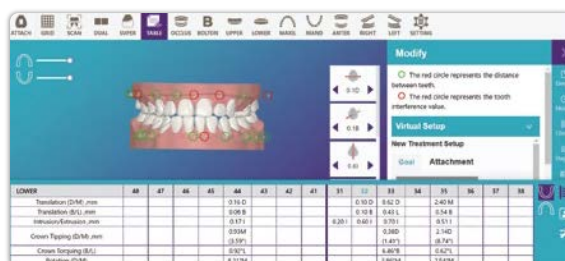


New Design Software - Trio iDesign

The new design software is fully integrated with our new 3D visualisation software. Doctors will be able to review simulations with all treatment details, tooth movement table, IPR, and Bolton analysis. Furthermore, doctors will be able to move the individual teeth themselves if they want to make minor adjustments to the treatment plan.



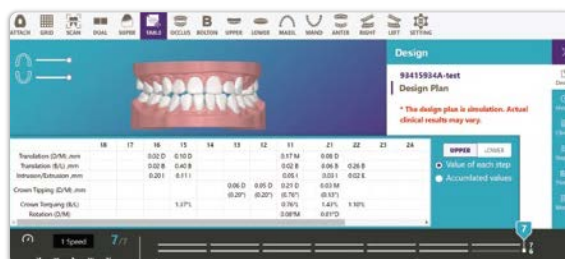
Superimposition



3D Modification



Bolton Analysis



Tooth Movement Table



Approved Plan Changes (APC)

Instead of counting refinements, TrioClear gives unlimited remakes to doctor as long as the final teeth position in approved treatment plan remains unchanged. If doctor wants to change the final teeth position, you need to use an Approved Plan Change (APC) credit.

Treatment Options

Free APC Credit

Touch Up Plus

1

Complete

2

If doctor runs out of APC credit for the case, and would like to amend the final treatment plan, they may purchase additional credits.



SCIENTIFIC HIGHLIGHTS

EDITOR'S CHOICE



J Periodontol. 2021 Nov 5. doi: 10.1002/JPER.21-0015.

Clinical performance of hydrophilic, titanium-zirconium dental implants in patients with well-controlled and poorly-controlled type 2 diabetes: One-Year results of a dual-center prospective cohort study

J M Latimer, K L Roll, D M Daubert, H Zhang, T Shalev, ABCD study collaborators, L F Wolff, G A Kotsakis

STUDY OBJECTIVES AND METHODS

This study assessed the clinical performance of hydrophilic dental implants in a patient cohort with type 2 diabetes mellitus (T2DM).

Subjects with T2DM of ≥ 2 -years duration were allocated to either the well-controlled (WC; $\text{HbA1c} \leq 7.0\%$) or poorly-controlled (PC; $7.5 < \text{HbA1c} < 10\%$) groups in a dual-center, prospective cohort study. Each subject received a single, titanium-zirconium (Ti-Zr) dental implant with a chemically-modified, hydrophilic (modSLA) surface in a posterior mandibular site. Postoperatively, subjects were followed at 1, 2, 4, 8 and 12-week intervals. Post-loading, subjects were followed at 3, 6 and 12-months. Clinical and radiographic parameters of implant success, and dental patient-reported outcomes were collected.

RESULTS

- Twenty-one dental patients (NWC = 11; NPC = 10; mean age: 66.8 ± 7.5 years) were enrolled and the 1-year implant success rate was 100%.
- Peri-implant bone levels were stable with 0.15 ± 0.06 mm mean marginal loss at one year without significant inter-group differences ($p = 0.79$).
- Postoperative pain was minimal at 1-week, and OHIP-5 scores decreased significantly over time as compared with preoperative levels ($p < 0.001$) suggesting significant improvement in patient-perceived oral health following implant therapy.

CONCLUSIONS

Elevated HbA1c levels $> 7.5\%$ did not compromise 1-year success rates, or oral health-related quality of life in PC patients receiving modSLA, Ti-Zr implants.

CHALLENGES

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Durable, Contemporary Cementation Of Lithium-Disilicate Crowns And Veneers

BISCO CLINICAL PAPER

Jack D. Griffin, Jr., DMD

Clinicians have many restorative options from which to choose. For indirect restorations, the selection of cementation technique is critical to a successful outcome. One emerging trend in dentistry today is the development of materials that have bio-interactive or regenerative qualities. This case presentation reports on the use of a calcium silicate-based dual-cure resin cement that has shown to be effective for use with full-coverage lithium-disilicate restorations due to not only its excellent clinical characteristics but also calcium and fluoride release capabilities. The case also includes conservative lithium-disilicate veneer restorations.

Many viable material choices are available in restorative dentistry today. Despite the ever-growing arsenal of newer materials and techniques, clinicians are often reluctant to change from using those materials and methods with which they are most familiar and have had success. Above all else, clinicians want predictable, repeatable results.

Restorative dental materials have advanced to meet the increasingly bio-friendly and metal-free esthetic demands of the public today. Contemporary materials are expected to have, not a negative, but a positive effect on living tissues. An aversion to metal, the avoidance of potential allergies, and the systemic effect of dental materials all drive the dental profession to be more biologically tolerant.

Versatile Predictability

When working with indirect restorative materials, clinicians require consistency in esthetics, functionality, durability, and patient comfort. Zirconia and lithium disilicate have become dominant materials in modern metal-free dentistry.¹ They are commonly used for restorations ranging from conservatively prepared veneers to full-coverage crowns to full-arch prostheses.² Factors such as occlusion, parafunctional habits, esthetics, and biological effects influence a clinician's choice of indirect materials.^{3,4}

The success of lithium disilicate, specifically IPS e.max® (Ivoclar Vivadent, ivoclarvivadent.com), has been well

documented, and it has become one of the most versatile esthetic materials in dentistry.⁵ The dental profession has had more than 15 years of clinical performance and numerous studies to fairly evaluate this material, its clinical properties, and durability.^{6,7} Success has been observed in both full-coverage and conservative restorations as well as in anterior and posterior situations.⁸

High translucency imparts vitality to a restoration and is important to its esthetic success.⁹ The esthetic predictability of lithium disilicate, particularly when used in conservative anterior preparations, makes it a popular cosmetic material choice. Lithium disilicate is available in several different levels of opacities. The opacity should be chosen on a case-by-case basis depending on preparation shade, thickness of the restoration, and desired final shade.¹⁰

Modern Cementation

Cementation technique is critical to restoration success,⁸ and clinicians have many materials and methods from which to choose: cement or bond, light cure or chemical cure, acid-etch or no etch, bonding agent or self-adhesive, silane or sandblasting, etc. Retention is but one of many factors influencing cement choice. Other factors include long-term physical properties, color predictability, ease of clean-up, and the luting material's compatibility with the restoration material.¹¹ Self-adhesive resin cements work well with retentive preparations, but light-cure resin cements with separate steps for phosphoric acid-etching and adhesion provide better long-term results with preparations that have less-than-ideal retention.^{12,13}

Light-cure-only resin cements are often used with conservative anterior restorations because of their longer working time, predictable clean-up, excellent esthetics and color stability, and high strength.¹⁴ Transparent light-cure resins have been demonstrated to yield superior color stability when compared to luting materials with more color or that are dual cure.¹⁵

Full-coverage restorations allow for greater diversity in cementation choices. Self-adhesive dual-cure resin cements are popular with full-coverage restorations because of their simplicity and predictable results. They provide a moderate bond to dentin and good esthetics.

A newer emphasis has been placed on cements that are bio-interactive or regenerative in nature.¹⁶ Bioavailable ions generate an alkaline pH environment, neutralize acid, and ultimately promote healing, which may result in a less sensitive, longer-lasting restoration. The cement responds to the oral environment to provide therapeutic ions.¹⁷ Calcium silicate-based dual-cure resin cements have shown to be an effective choice for full-coverage lithium disilicate because of excellent clinical characteristics along with calcium and fluoride release.¹⁸

The following case report demonstrates the use of an ion-releasing self-etch, self-adhesive calcium-silicate resin cement with layered lithium-disilicate crowns and a translucent light-cure resin cement for placement of lithium-disilicate veneers.

Crown And Veneer Case

A 61-year-old patient presented with her tooth No. 9 crown loose, and she could actually remove it (Figure 1). Many years earlier the patient had had endodontic surgery, an apicoectomy and retrograde filling to repair a failing silver-point obturation, and was now symptom free. The silver point remained in the tooth and showed no lesions on radiograph. Tooth No. 8 had an unbonded porcelain veneer that had come off “several times” before. She wanted to replace the restorations on the central incisors with ones that would be a “lighter color” and to bleach her other teeth (Figure 2).

A full series of photographs was taken and reviewed with the patient. Occasionally, in the author’s experience, patients might want to choose a “lighter color” for their restorations and attempt to bleach their other teeth until they match. After some discussion and patient education, the patient accepted a plan calling for lithium-disilicate porcelain restorations on teeth Nos. 5 through 12, which included full coverage on the central incisors and conservative veneer preparations on the other teeth. A full-coverage restoration for tooth No. 8 was chosen because the existing preparation was primarily in dentin, there was

a history of veneer failure, and doing so would provide the laboratory with symmetrical consistency in restoration thickness.

Another full series of photographs was taken, a mock-up was done, and a temporary impression matrix was made. The patient chose a final VITA 3D shade of .5M1 (VITA, vitanorthamerica.com). Preparations were done using a coarse diamond (NeoDiamond®, Microcopy, microcopy-dental.com), with 1.5 mm occlusal clearance and chamfer margins. On teeth Nos. 5 through 7 and 10 through 12, 0.5 mm veneer preparations were executed with a finishing diamond, staying in enamel in all places except abfraction areas at the gingival margins. Preparation corners were rounded to reduce internal stresses on the restorations.

Shade photographs were taken on moist teeth with shade tabs on the same plane as the teeth (Figure 3). Because of the dark gray color of the endodontically treated tooth No. 9, the silver point was removed from the coronal portion of the tooth and replaced with a dual-cure build-up material (Core-Flo™ DC, BISCO, bisco.com), shade Natural/A1 (Figure 4). Communicating the final preparation shades accurately to the laboratory was critical in enabling the lab to choose the most translucent shade of lithium disilicate that would mask the preparation and achieve the final color desired.

Conventional impressions were taken with a polyvinyl siloxane material (Panasil®, Kettenbach, kettenbach-dental.us) in a stock tray and sent to the laboratory with all photographs, the bite registration, and a dentofacial analyzer index (Kois Dentofacial Analyzer, Panodent, panodent.com). Temporary restorations were made for the central incisors, 2% chlorhexidine (Cavity Cleanser™, BISCO) was painted on the teeth, and the restorations were placed with a temporary cement (ZONEfree™, Pentron, pentron.com). The veneer preparations were temporized via spot-etching and lock-on technique without the use of a bonding agent.

All records were sent to the laboratory and all case photographs were uploaded to the lab portal. After 5 days, the patient returned for evaluation of color, length, and function with the temporaries. Slight adjustments were made, polishing was done, photographs were taken, and desired changes were communicated with the lab.

Cementation For Crowns

The layered lithium-disilicate restorations were returned from the laboratory having been hydrofluoric acid-etched and silanated. With a frosty appearance the intaglio surfaces were ready for cementation. The temporaries were removed, the teeth were cleaned with flour pumice, and the restorations were inspected in place. No adjustments were needed in this case.



Fig 1. Patient with failed veneer No. 8 and dislodged crown No. 9.

Fig 2. Treatment goals were to replace restorations on the central incisors and lighten color throughout the dentition.

Fig 3. After restoration removal and veneer preparation, shade photographs were taken.

Fig 4. Silver point was removed from coronal portion of tooth No. 9, and build-up was done with dual-cure material resulting in less darkness on the tooth.

All restorations were rinsed, cleaned with a restoration cleaner (ZirClean™, BISCO) to remove contaminants, rinsed again, and re-silanated (Bis-Silane™, BISCO). The two crowns were cemented with a self-etch, self-adhesive calcium-silicate resin cement (TheraCem™, BISCO) and held in place for about 1 minute; excess cement was easily removed (Figure 5). After complete clean-up light-curing was done at the margins. In the author's experience, the calcium and fluoride release, easy clean-up, and physical properties make this cement an excellent choice for routine lithium-disilicate full-coverage placement.

This self-etch, self-adhesive cement is available in a "natural" shade and provides firm bond to dentin and most modern dental materials such as etched lithium disilicate and zirconia. The high calcium content in this calcium and fluoride ion-releasing cement gives the material a slightly opaque, white appearance but does not seem to influence the final restoration shade in routine indirect restorations.

Cementation For Veneers

The intaglio surfaces of the veneers after re-silanation were thoroughly dried, and a universal dentin bonding agent (All-Bond Universal®, BISCO) was applied and air-thinned. The teeth were isolated with retractors, etched with 37% phosphoric acid (Etch-37™ with BAC, BISCO) for 15 seconds, and rinsed (Figure 6). The universal adhesive was applied in several applications, allowed to sit for 20 seconds, air-dried with an air syringe for 10 seconds, and then light-cured for 10 seconds (Figure 7).

After material was extruded from the tip onto a napkin, the translucent light-cure resin cement (Choice™ 2, BISCO) was applied to each tooth, and the veneers were placed ensuring that excess material extruded from all margins (Figure 8). The excess material was brushed away and all restorations were flossed while being held securely in place. Along with long-term color stability, the light-cure-only material allowed for thorough clean-up and an efficient cementation process.

With each veneer being held in place, the restorations were cured with an LED light. Minor adjustments were made with a finish diamond, and the restorations were polished.

The patient was scheduled for a follow-up appointment for adjustments as needed, cement clean-up, final photographs, and to place direct composite on the facial surfaces of the second bicuspid for enhanced blending. The soft-tissue response at 6 months was excellent for both the full-coverage restorations and the veneers (Figure 9). The blending of materials, despite varied restoration thicknesses, was acceptable, and the patient enthusiastically approved of the final color shade (Figure 10).

Conclusion

As materials for indirect restorations continue to advance, biologically friendly cements can help generate a less sensitive, longer-lasting restoration through calcium and fluoride release. As demonstrated in this case report, a calcium silicate-based dual-cure resin cement, offering excellent clinical characteristics, including easy clean-up, was an effective choice for full-coverage lithium-disilicate anterior restorations.



Fig 5. Central incisors were cemented with a calcium-silicate dual-cure resin cement.

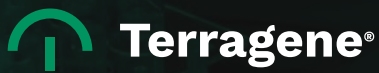
Fig 6. Teeth with veneers were totally etched for 20 seconds and rinsed.

Fig 7. Several coats of universal bonding agent were applied, air-dried, and light-cured.

Fig 8. Light-cure-only cement was applied to the teeth, veneers were placed, clean-up was completed, and light-curing was done.

Fig 9. Soft-tissue response was excellent, as was long-term prognosis.

Fig 10. Good opacity of the selected lithium disilicate resulted in a consistent final shade.



To further safeguard the safety and interests of patients, the Department of Health has issued a new regulation (Cap. 633 Private Healthcare Facilities Ordinance) to all private healthcare institutions, which takes effect from July 2022. The license of those private healthcare facilities is required to comply with relevant codes of practice.

Adopting A High-Efficiency Monitoring Equipment To Meet The Guidelines Of Sterilization

Under the Ordinance, all reusable medical supplies and equipment used in invasive medical procedures must be properly sterilized in accordance with sterilization procedures, and the relevant records shall be provided to the Department of Health on a regular basis.



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◆ IC10/20 Dual Incubator

Dual incubator for Biological Indicators and Hygiene Monitoring Systems



CHEMICAL INDICATORS



◆ CD29 Multivariable Chemical Indicator (Type 4)

Multivariable chemical indicator for monitoring steam sterilization processes.



◆ CT22 Super Adherent Indicator Tape

Sterilization package sealing tape with process indicator for monitoring steam sterilization processes.



◆ IT26-C Moving Front Chemical Integrator (Type 5)

Moving front Chemical Integrator to monitor steam sterilization processes between 118°C and 138°C.



◆ BD125X/2 / Bowie & Dick Test Pack Chemical Indicator Bowie-Dick

Bowie-Dick test pack detects inadequate air removal and steam penetration in vacuum-assisted Steam sterilizers. Bowie-Dick.



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◆ 20min Biological Indicator

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LIFESTYLE **ENTHUSIASM** FOR CARS

Dr. Steven Wong

“

The strangeness of current times, with Covid-related issues still making day-to-day life challenging for many, has likely prompted myself to enjoy even more the quality and unique time spent in a performance car. It has also become my way to cope with all the stress life brings to me. Just stay focused, press the clutch in, downshift to the lower gear, blip the throttle to bring the engine rpm up and lift off the clutch pedal. Just a few simple steps and all stress in life is gone, at least at that moment.

”



With the DB9 taking over from the DB7, Aston Martin took the Vantage name and built a back to basics two-seater V8 sports car with it. It was pretty, small, powerful, and debuted in 2005 to set the benchmark for the current Vantage model. This V8 is a 4.3-liter lump with, unlike the standard, a six-speed manual transmission.

All Aston Martin models are hand-built by factory workers in their Gaydon headquarters in Warwickshire, England.

THE HISTORY OF BRITAIN'S FINEST PARTNERSHIP: James Bond and Aston Martin

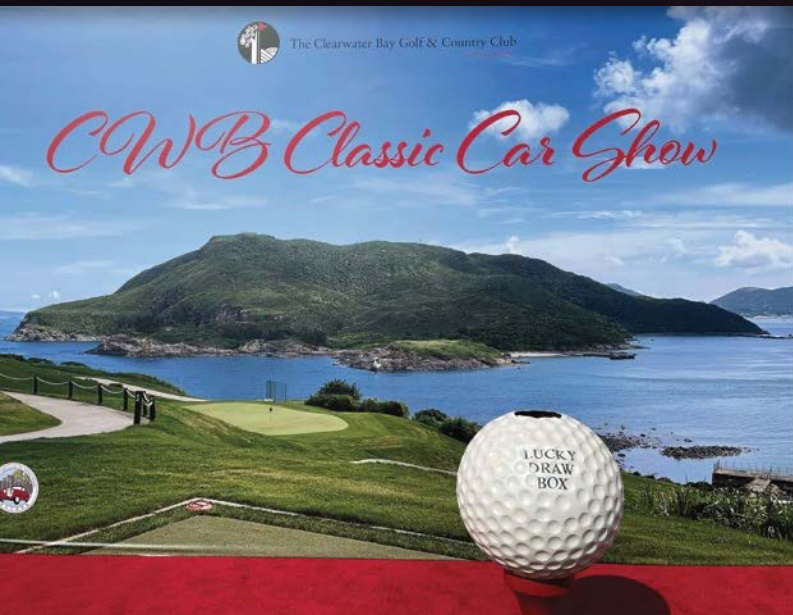
Aston Martin's long-standing relationship with the James Bond franchise is an iconic British collaboration that's over 50 years old and just like many Aston Martin owners, I had always wanted to own an Aston ever since I had seen the James Bond movie when I was a kid.



2021 Annual Dinner of Aston Martin Enthusiasts, themed 007 NEVER NO TIME TO DRIVE

The Car Community

When you meet someone who spends just as much time browsing for car parts as you for a used Aston, you tend to get along. Some of my best friends are petrolheads and can do generous things like helping you fix your flat battery or letting you abuse the clutch in their car so you can learn to drive a car with a manual gearbox. So it is not simply owning a car, but a big happy family. Before the pandemic became really bad in Hong Kong, we were still allowed to come together to enjoy the precious moments which were all about cars.



With all the cars revved up, we made our way through the city traffic and headed into the beautiful countryside of Clearwater Bay to join the CWB Classic Car Show 2021. Organised by Classic Car Club of Hong Kong, and hosted by Clearwater Bay Golf and Country Club, the occasion featured a display of over 100 supercars and rare collector vehicles.

By lunch time almost everyone had arrived, so a grand display of 130 classic cars lined the golf field with the clear water and islands in the background.

For one second I did not realise I was in Clearwater Bay because there were huge numbers of classic cars from all over the world and produced in different years, making it like an international car show. As an iconic part of the long history of the British marque, we could see cars produced by Aston Martin, Jaguar, Lotus, Morgan, MG and Mini. There were also German automobiles from BMW, Mercedes and Porsche, which are the favourite for many people in Hong Kong.



With picnic tables laid out, offering the varied delights of good picnic food we were all pleased to be there and delighted to be free once again to catch up with friends. It was really good to have social contact again. The day was absolutely beautiful with blue skies and a warm sun.



Esthetic Challenges of Immediate Implant Placement and Provisionalisation of Maxillary Anterior Single Implants

Dr. Johnson Zhang



Tips to Share

- Immediate implant placement and provisionalisation is a viable option for replace failing maxillary anterior teeth.
- Chairside provisionalization can provide aesthetic solution and maintain the gingival contour around the previous crown.
- Customized chairside impression copings preserve soft tissue and transmit contours to the lab.



Initial Situation Description:

- The patient presented with marginal gingival inflammation around the #21 crown.
- Clinical and radiographic examination revealed increased pocket depth, deep subgingival fracture, and secondary caries on #21 crown.

After presenting possible treatment options, the patient chose the treatment plan as follows:

1. Extraction of #21
2. Immediate implantation as possible
3. Simultaneous hard and soft tissue augmentation as needed (soft tissue graft was not placed during implant placement since the gingival tissue was still inflamed. The need for soft tissue graft can be reassessed later)
4. Chairside immediate provisional crown with bis-acrylic material and temporary abutment

SURGICAL PROCEDURE



Atraumatic extraction and implant placement with Xenografts fill the gap to socket wall.



Customized chairside impression copings preserve soft tissue and transmits contours to the lab.



View of provisional 3 months after implant placement.

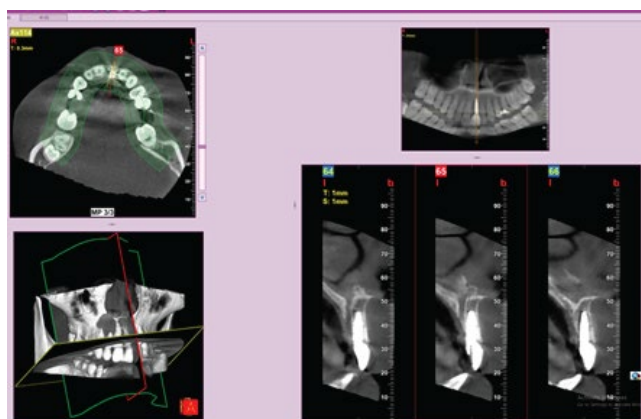


View of permanent crown 6 months after implant placement.

CBCT image pre-op



CBCT image post-op



Conclusion

Dental implants in upper anterior area are aesthetically challenging. Post extraction socket preservation with later implant placement (4-6 months post extraction), early implant placement (4-6 weeks post-extraction) with contour bone augmentation used to be our clinical choices.

However, all these approaches require non-implant supported temporaries and a time-consuming soft tissue molding period. Immediate implant placement with a chair-side provisional crown offers benefits like minimal surgical trauma, simplified soft tissue molding and immediate implant-supported aesthetic provisional. With careful case selection and treatment planning, this is a viable treatment modality in aesthetic zone.

Which are the difficulties or challenges of this technique colleagues should be prepared for?

The common difficulties for immediate implant in aesthetic zone:

1. Preserve buccal plate during extraction. Clinicians should plan this part carefully, like consider tooth sectioning, and clinicians also need to prepare proper tools like osteotome to carry out the extraction plan.
2. Accurate implant site preparation at fresh extraction socket is always difficult. Clinician can use a sharp end pilot drill to start the preparation palatally to avoid slipping during preparation or use guided surgery to ensure accurate preparation.
3. Temporary crown construction may give clinicians a lot of pressure. A preformed temporary crown with a template or anchored to adjacent teeth is advantageous in this case.

What are the key advantages of this technique and which the major risks?

The key advantages of this technique are from two aspects. Firstly, patient's comfort. There is only one surgical procedure during the whole treatment modality, and usually minimal post-surgical pain or swelling is experienced since no flap is raised and the periosteum is intact. Patients who received treatment usually give very positive feedback from author's experience. Second, this treatment modality saves a lot of clinical time. Another clinical choice is early implant placement combined Contour bone augmentation procedure, in which clinician needs to perform a flap

procedure with periosteum releasing, use graft material and primarily close the wound, give at least 2-3 months healing time. Moreover, clinician needs to use a newly made temporary crown to mold the soft tissue afterward which usually requires several visits of modifications to achieve the satisfactory aesthetic result. However the immediate approach give clinician the chance to mold soft tissue with a temporary crown which can copy the configuration of extraction socket at the very first day of treatment, and this temporary crown usually need minimum modification according to author's experience. Apart from the above advantages, we must understand the immediate approach is also very challenging and has more

limited indications. Pre-treatment assessment and case selection are key. We also need to bear in mind that the plan may not be carried out successfully all the time and a contingency plan is needed if the attempt of immediate implant placement and immediate temporary crown installation is failed. Besides, we also need to predict and observe the buccal volume after treatment. In author's practice, CTG graft with a tunneling technique will be done simultaneously for thin biotype cases to boost the buccal volume. For cases without soft tissue graft, author will review the patient regularly and consider soft tissue graft procedure if the buccal volume changes drastically.

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CASE STUDY II

PhotoBioModulation

An Updated Literature Review with Relevant Case Report



Dr. Kevin NG

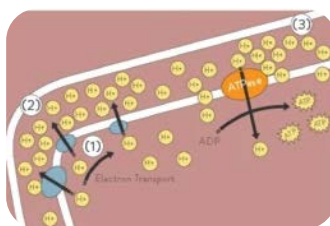


Dato' Dr. How Kim Chuan

Orthodontic tooth movements cause pain and discomfort. It also takes long time to complete, the average treatment time is usually about 2-3 years to achieve satisfactory results. These factors have been hindering patients seek treatment. To avoid long term suffering and to enhance patient co-operation and compliance, PBM (Photo Bio Modulation) on possibility of shortening treatment times. Although different clinicians hold different views regarding to the application of PBM to influence orthodontics effects and outcomes, 1 case is reported here with satisfactory patient feedback and acceptable clinical outcome. The PBM device was used which contain of 42 LED Cores that produced 828nm wavelength light and stimulate 4mins on each arch daily. It was found that there were 50% treatment time gained for the whole Invisalign treatment course with no pain felt and improved results.

The PBM Device

The bite plane device consists of 42 LED Cores and the power input is 2.1Volts. The current of each LED Core is 30mA. The LED Cores produced 42 855nm. Wavelength to stimulate the target sites. Energy absorbed after 4 minutes per arch is 248 joules. The manufacturer claims the science of Photo Bio Modulation (PBM) mechanism in orthodontics is to enhance the biology of the treatment area and improve the healing of bone and soft tissues and further enhance tooth movement.



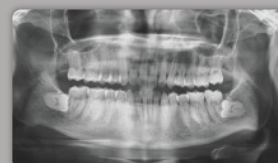
PBM Ortho light therapy stimulates Cytochrome C Oxidase to pump Protons>Increased proton concentration>increased ATP production

Case Report

Male patient CST, age 20 presented with Class I Molars, moderate anterior crowding of upper and lower arches. Rotation of 12, 23, 33 and 43. There was lower mid-line shift to left about 2mm. Overjet 1mm, Overbite 3 mm.



Pre-treatment OPG



Post-treatment OPG



CASE

Patient does not wish extractions and requested shortness possible time to finish the treatment. Itero scanning were performed, and arches expansions were designed to improve the arches form to create spaces for alignments. The numbers of aligners were 45 sets and treatment time was suggested about 1 year with 1 aligner each week. PBM lights were prescribed, and 2 aligners were used for each week. The 45 aligners should be finished wearing by 23 weeks. The PBM device were applied for 4 min daily on each arch and patient was advised to return to clinic monthly to check and ensure fittings. Patient was also informed to record the degree of pain/discomfort monthly in the given form during aligner treatment. The feedback pain scores

were 2-3 for the whole period. OPG were taken before and after treatment and found there were no root absorption occurred.

Discussion

Surgical corticotomy were used to accelerate orthodontic tooth movement before the application of PBM. However, the post-operative pain and complications cause concerns to patient. In 2013 Kau assessed 73 patients and 17 controls who were fitted with traditional orthodontic brackets and wires, and treated with 850nm wavelength Near-Infrared light with a power density of 60 mW/cm² for 20-30 min per day. He observed Photobiomodulation achieved clinically significant accelerated tooth movements as compared to control group. Lao proposed PBM is a non-invasive stimulation of the dentoalveolar complex with ATP production at the mitochondrial cells. Due to increased level of metabolic activity, ATP is increased at a localized and cause remodeling process. Infrared light double Cytochrome oxidase level which mediates ATP production. Higher ATP availability accelerate cells 'turnover' resulting faster remodeling process and tooth movement. 1.12mm movement per week for PBM group were observed compared to 0.49mm in control group.⁽¹³⁾

The mechanism of photobiomodulation is due to certain biologically wavelengths elicited by the LED cores that have therapeutic effects at cellular levels. The photon source after LED produced favorable effects both in animal ⁽³⁾ and recently human clinical studies ^(12, 14, 15). The early clinical trial started with pain control, tooth movement acceleration, and increase bone remodeling and quality. Recently, this therapeutic technology had success reports on the improvement in mini-screw stability, TMD disorders, root resorption, bone consolidation during maxillary expansion and distraction osteogenesis. It is easy to operate and non-invasive, the clinical use is wide. Shan et al in 2021 found that PBM had promising effect on post-orthodontic root resorption rehabilitation. ⁽¹⁾

Reis et al in 2021 suggested during orthodontic tooth movement, cytokines were released in the gingival crevice and affect bone remodeling. PBM stimulations have increased the levels of IL-1 β , IL-8, OPN, and PGE2 LLLT was statistically related to an increase of IL-1 β levels.

Brawn et al in 2017 investigated the use of Biolux light emitting diode phototherapy daily for 21 days on extracted socket with HA grafting. They found there were accelerated bone healing in the phototherapy-treated HA socket graft. This may

provide faster implant osseointegration and healing compared to control group. ⁽¹⁷⁾

Ekizer et al in 2016 studies found PBM had potential of accelerating tooth movement and had a positive effect on mini-screws ^(4,9) and these results were agreed by AlShahrani et al in 2019. They found there were statistical significant difference between PBM therapy compared to non-stimulated group with a mean difference of 0.59. ⁽⁸⁾ It was proposed that the action of LPT IL-1 β attract leucocytes and stimulate fibroblasts, endothelial cells, osteoclasts were proposed to cause the effects.⁽⁹⁾

In another study, Ozturk in 2020 found PBM applications has showed inhibitory and reparative effects on OIIR by modulating the RANKL and COX-2 expression levels. Resorption lacunae volume (p & lt; 0.001), number of resorption lacunae (p & lt; 0.05), and percentage of the resorption (PR) lacunae (p & lt; 0.001). The levels decreased with PBM applications when compared with the positive control groups. They also found the effects of the different wavelengths were similar. ⁽⁷⁾

Sfondrini et al in 2020 studied the pain experience on subjects with banded Maxillary first molars. Each molar received 1 session of PBM treatment on two buccal and two palatal points. In the trial group, PBM treatment has shown to be an alternative to decrease pain sensation as compared to control group. ⁽¹¹⁾

Reis et al in 2021 suggested during orthodontic tooth movement, cytokines were released in the gingival crevice and affect bone remodeling. PBM stimulations have increased the levels of IL-1 β , IL-8, OPN, and PGE2 LLLT was statistically related to an increase of IL-1 β levels. ⁽¹⁰⁾

Abellán in 2021 use Intraoral scanner and CBCT to study Molar Intrusion using mini screw as anchorage. Again they found the technique is effective in accurately monitoring the intrusion distance (p > 0.05). CBCT records allowed volumetric evaluation of the root resorption process and found lesser in the PBM group. ⁽⁵⁾ They also suggested: "application of PBM may provide better periodontal records and lower progression of root resorption at the expense of little lower intrusion distance and velocity". ⁽⁵⁾

Finally, Caccianiga in 2022 reported 30 patients treated rapid palatal expansion. Pain was significantly lower in the experimental group. ⁽¹⁶⁾ PBM was used in orthodontics together with anchoring TAD micro-screws as stability. After 60 days post-treatment, significantly higher stability was noted in the PBM group, and the authors had concluded that application of the 808 nm diode laser increased micro-implant stability clinically. PBM also decreased pain felt by patient. ⁽²⁾

Conclusions:

With the updated information suggested above, it is possible to apply PBM safely to assist orthodontic patient and even to improve treatment time and outcome for patients who have received implant treatments. The findings here suggest that intraoral PBM could be used to decrease alignment treatment time, pain/discomfort and qualify of bone formation that could promote bone

healings and osseointegration of dental Implants. However, due to its researches limitations, further extensive researches by multi-centered, randomized clinical trial is suggested.

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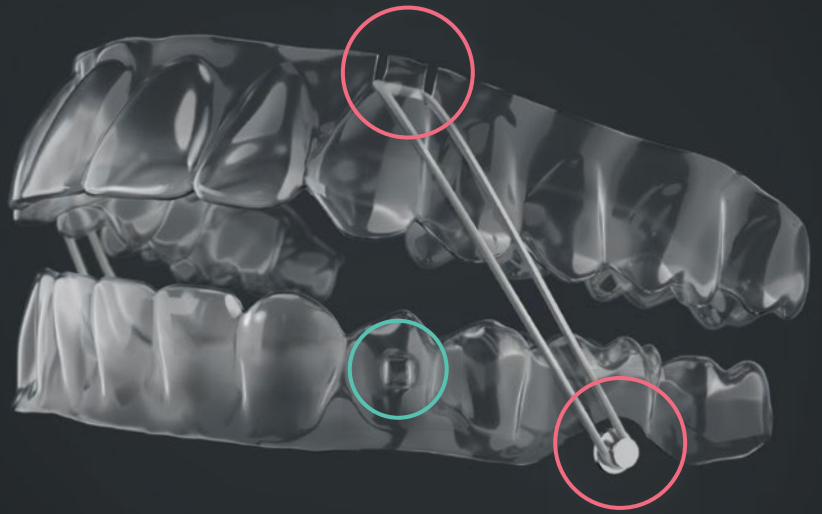
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ITI DAY IN HKIDEAS

The annual HKIDEAS, has been traditionally the high-time of Hong Kong dentistry. This year even more, a special surprise awaited all participants through a unique partnership of HKDA with the International Team of Implantology! A full day with cutting edge implant dentistry from some international heavyweight speakers was a much anticipated event and maybe the start of a new tradition!



HKIDEAS ITI DAY



HKIDEAS ITI BOOTH

International Team of Implantology

is a global network of clinicians, researchers, academics, all joined by their shared enthusiasm of Implant

Dentistry. Unlike a typical society or association, ITI remains first and foremost a "team", a global space where like minded people can join forces, learn from each other and grow to serve patients better! This way ITI can mobilise great teachers and resources to help members anywhere in the world, with a network of sections, events and study clubs covering the globe. At the same time, every member can access ITI learning opportunities everywhere in the world, from conferences, courses and scholarships to top institutions and clinics. The HK ITI Implant Day was an initiative of the ITI Campus Hong Kong in partnership with the HKDA, which aimed to bring the best of implant dentistry to HK dentists.



Contact us

The day started with Dr. Stephen Chen, former ITI president and main speaker of the event. Dr Chen, a periodontist, researcher and world class speaker maintains a specialist private practice in Melbourne and is also Associate Professor at the University of Melbourne. He started the day discussing the importance of timing of implant placement for successful and sustainable clinical outcomes. Immediacy is a rising concept with many benefits for the patient, but not something for everyone. The choice however is not always easy and very often one has to look very carefully in the patient and the anatomic conditions before a decision is clear. What we know about the process of healing today combined with evidence of clinical outcomes serves as a compass to help us select the right procedures. He then went on to articulate specific case selection criteria for immediate, early and late placement and discuss each pathway with actual patient cases and videos.

The afternoon started with Professor Daniel Wismeijer from The Netherlands. Professor Wismeijer is a specialist Prosthodontist with long clinical and research experience, having served for years as director of the Implantology University clinic and postgraduate programme in ACTA, one of the top global Universities. He is a global expert on digital dentistry, thus his topic was also unique and innovative, in the heart of "digitization".

The digital workflow is often perceived as a new way to approach an old process, but in reality it is a whole new process. The 3D virtual image we work with in our computer is a reconstruction of the reality, as it is compiled by a large number of 2D images, optical or radiographic through a large number of software and algorithms. The "rendered" reality therefore brings together a whole new understanding, possibilities but also limitations and risks. How to navigate the world of "rendered reality" dentistry will require some new skills but also new knowledge and evidence of how technology works.

Professor Nikos Mattheos followed right after on the topic, by introducing the latest in the field of Computer Assisted Implant Surgery (CAIS). Professor Mattheos is a periodontist with long teaching and research experience in Implant Dentistry, who for many years directed the ITI Centre of Excellence in

the University of Hong Kong. He is currently visiting Professor at Chulalongkorn University in Bangkok and department of Dental Medicine at Karolinska Institute in Sweden. The focus of his presentation was how CAIS technology can help clinicians today to not only practice more efficiently, but also unlock new treatment possibilities for their patients. Despite the enthusiasm with the technology however, the wider implementation in the mainstream clinical practice is not without challenges. Apart from the initial high investment and significant learning curve, factors such as technical limitations, cost/efficiency, scope of clinical procedures and patient characteristics might limit the anticipated benefits of CAIS for many clinicians. Research in the field of CAIS, either as static or dynamic has been initially focused on accuracy of implant placement, yet accuracy is only as meaningful as the overall treatment plan it is part of. Whether the increased accuracy will be a "game changer" or just a small increase in the efficiency depends on the overall workflow and the ability to design a comprehensive treatment plan. Through a major clinical research project at Chulalongkorn University data has been now produced to support decision making based on the overall efficiency parameters, rather than just figures of accuracy. Although the value of CAIS in straightforward single implants remains important, the true potential of these technologies unfolds with increased complexity. CAIS empowers advanced loading protocols within immediacy, with the use of prefabricated immediate provisional restorations or even immediate loading. Furthermore, as a core technology it unlocks many future directions such as robotic implant placement.

The afternoon continued with Professor Daniel Buser, from the University of Bern in Switzerland. A global authority in implant dentistry, Professor Buser is pioneer clinician and researcher of more than 35 years and also former president of the ITI. His topic was the role of Hybrid Design (HD) implants, their evolution and the future in implant dentistry. He mentioned that the term HD implants has been created by Dennis Tarnow in 1993, and the "mother of all HD implants" was the tissue level implant of ITI, which was first placed at the University of Bern into patients in 1986. HD implants have a machined surface "collar" in the neck portion, which corresponds to the transcrestal area. He then presented long term evidence of the advantages of such design as well as recent developments and additions.

Finally, the day was concluded by Professor Man Yi of the West China School of Stomatology. Professor Man Yi is director of the Implantology Clinic, ITI Fellow and a very influential researcher and teacher. His topic presented the art and science of suturing, where he discussed the essential steps to secure proper healing outcomes in implant surgery. He reviewed different suturing protocols and discussed different techniques as well as the most common challenges and errors, through actual clinical cases and surgical videos.

The ITI day in Hong Kong ideas was a day full of ideas, discussion, evidence and practice. It was just the beginning, as ITI has a long and successful presence in Hong Kong and the ITI Campus Hong Kong is ready to welcome novice and experienced colleagues in Implantology's largest global network!



A woman with blonde hair and blue eyes, wearing a light blue button-down shirt, is holding a red smartphone in front of her mouth. The phone's screen displays a virtual dental simulation of a human mouth with teeth. Blue arrows on the screen point to the upper and lower teeth, indicating alignment or movement. The background is a blurred indoor setting with warm lighting.

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Issue 002 | April 2022

*TAKE A BREAK
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