insight

"fostering excellence in dentistry through top quality education"

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Reflecting on change at the doorstep of a new year

by Dr. Nikos Mattheos

Editorial

Yes, it's over! What became a nightmare year of disruption and uncertainty is at last about to end! This year's pandemic caught us all by surprise. As it's common, we experience the challenges first, before we see the opportunities. While the most optimistic of us were anticipating a short-lived disruption, there was soon a harsh landing to the reality that many things will have to change for the foreseeable future.

The pandemic has acted as a catalyst, as if an invisible hand has pushed the "fast forward" button and many underlying trends will be accelerated due to imminent "evolutionary pressure". The new practice safety protocols and movement restrictions, an increasingly fearful public, an anticipated economic downturn in the near future, all might drastically increase the need for efficiency and will boost techniques, technologies and devices that offer simpler, faster and more streamlined workflow. This might be a catalyst for many technologies in the digital domain. At the same time, the "patients' experience" will become an important parameter to define a successful treatment outcome and also a major determinant in our decision making between treatment techniques and devices.

So in this issue, we take a closer look at the opportunities and we focus on becoming "minimally invasive"! You will have the chance to read among others on the art and science of veneering, a flagship of minimally invasive prosthodontics by the distinguished prosthodontist Dr. Daniel Fang. Then don't miss to read how a microscope can improve your clinical success in pretty much everything, in a great article by Dr. Eric Leung! An Online Masterclass of a popular course on Implant Complications by Drs Mattheos and Janda will be launched soon, introducing some next generation "minimally invasive learning" - if I may paraphrase online education! Finally, find out why a CBCT is the next beest thing afterX-ray vision in the article of Dr. Wong and explore the limits of periodontal and peri-implant regeneration with Dr. Lai!

And finally, leaving the best for last, we have some big news: an old classic is being revamped and will be with us in 2021! The Hong Kong ITI Education week, one of the highest profile international events in Implant Dentistry is to be launched again in 2021, with all the classic concepts but a modern focus and a brand new dream-team of overseas and local speakers!

It looks like at last, 2021 will be a year with lots to celebrate!

I wish you a great start in the New Year, health, happiness, success and stay tuned for more!

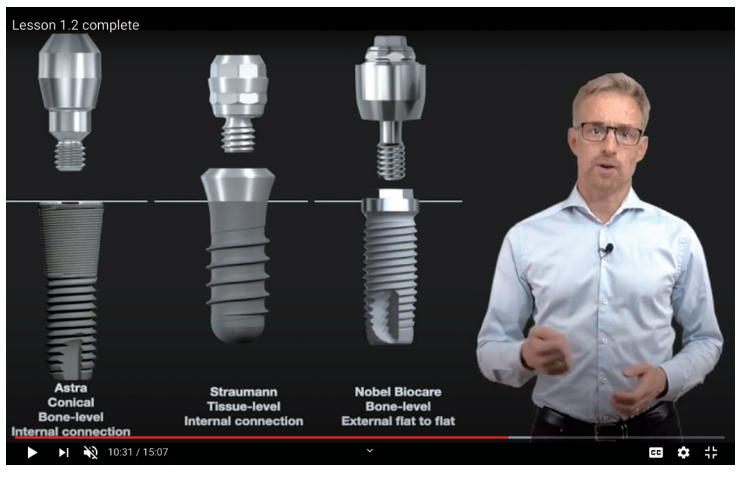
Understanding Implant Complications: The Online Masterclass! "next-generation" in online learning !

In this first multidisciplinary online masterclass, you will learn how to find the real causes and how to design step-by-step the proper management strategies!

New Course

This year's pandemic was a major disruption to everything "teaching and learning". from kindergarten to University. Especially within professional education, the sudden halt of travelling and face-to-face meetings created a major vacuum, which was initially filled with a "tsunami" of free online webinars of all sorts. And as this "webinar-wave" was enough to sustain interest for the first few months, it gradually became apparent that quality education and professional development demands more in terms of both methods and structure.

Converting our face to face seminars into online webinars, was an emergency solution to maintain a level of activity, but this can only work in the short term. There is a limit of how many free webinars can people attend, before "Zoom fatigue" kicks in and dentists all over the world are already looking into what could be the next step. Learning on-line is a whole new environment of opportunities and limitations. Just as every environment, there are things that work and things that don't. They can offer amazing learning outcomes when approached wit ha new mindset, or they can flop miserably when treated as just one more podium to deliver a lecture. The real challenge with online learning is about "re-engineering" a complete learning experience and adjusting it not just for a new medium, but for a whole new environment.



In the past months, we took up this challenge and we worked with the best to re-create the full experience of a Masterclass in an online environment. Although the content was there, it took us several months of work to engineer the experience, to experiment with new modes of interaction, to design the checkpoints and pathways, to test what works and what doesn't. We saw technology as a potential not a limitation to allow us to work closer than ever before. In the process we came up with some great discoveries and "aha" moments, which you will see gradually unfold in the coming months. Learning online is not just about the delivery of content but also the creation of a community of learners.

In that sense, we are very proud to release this month our first "baby", the Online Masterclass on Understanding Implant Complications, by Drs Mattheos and Janda. The Masterclass is based on a very successful intensive weekend course that has been presented in many cities in the last 4 years, always sold out and with amazing feedback. A key success element of this Masterclass was the unique multidisciplinary approach and the evidence-based yet clinically relevant approach of Nikos Mattheos and Martin Janda. Biological and technical complications have been traditionally examined as separate and non-related pathologies. Nevertheless, increasing evidence points to the close interrelation between biology and technology. Whether clinically manifested as screw loosening, Veneer chipping or plaque induced peri-implantitis, very often, a biological problem could be the underlying factor for a technical failure and vice versa. The strength of this Masterclass was that it did not only present management strategies, but also went several steps back, investigating both biological pathogenic mechanisms, technical limitations as well as design and treatment planning features to "demystify" complications.

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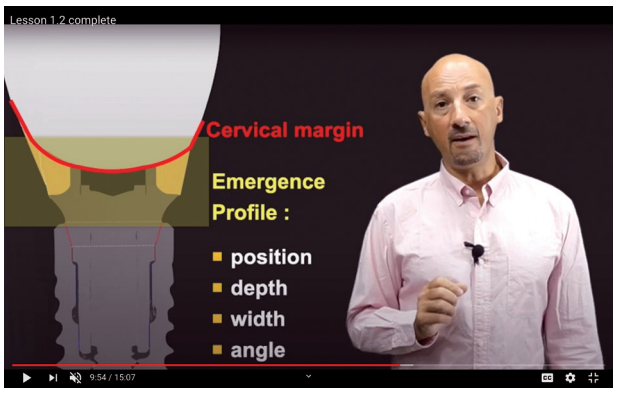
Adapting such a course for an online environment, was a great challenge, to the extent that the online Masterclass is actually a whole new course and one step further! The aim was not just to recreate the course atmosphere but furthermore to build an online community of learners supporting learners in a long-term transition. In this sense, completing the online Masterclass is not just about acquiring some new knowledge, but rather the ticket to a community of learners to support change and competence in the long term.

The Online Masterclass is built on a unique online-pedagogy, targeting the development of clinically relevant competences, right from the start. It includes short and concise seminars critically discussing fundamental evidence and facts, detailed step-by-step "how to" videos of clinical procedures and clinical cases with interactive patient scenaria. It is all supplemented by essential readings, summaries and "how to" guides, discussions, assessments and a "closed" online community of alumni. It comes in 3 modules, the first of which is open and free.

As a learner, you can take the learning process at your own pace, switching between self-paced or prescribed pathways, guided by actual patient cases, which you can study, discuss and practice in the comfort of your clinic, but without being alone. As a CDE member you can take advantage of the significant discount in the course fee for the whole January!

It is with great pleasure that we now invite you to take the online Masterclass in Understanding Implant Complications and join a community of next generation e-learners and practitioners!



SCAN ME

Excited to learn more about implant complications: join the online Masterclass at https://l.ead.me/onlmasterclass

An Introduction to Microscope Centered General Dental Practice

by Dr. Leung Siu Fai, Eric

An operating microscope in the past was seen by many as a luxury, only meaningful for specialist practice. As the practice of dentistry in all disciplines is increasingly moving to the "micro" level, a microscope becomes an amazing tool to increase clinical success in general dentistry! Read more about the benefits of a Microscope-centered General Dental Practice in the article of Dr. Eric Leung!

The use of the surgical operating microscope has been reported as early as in the 1920s, but the advantages of using it had only caught wider attention in the 1950s in microsurgery in Ophthalmology as reported by Dr. Richard A Perritt.[1] Later on, the microsurgical approach became more and more popular in other medical fields such as Otolaryngology, Ophthalmology and others, it also had a crucial role in the microsurgery for re-attaching severed extremities.[2-4] Reports of the use of the operating microscope in dentistry can be traced back to 1981 by Dr. Apotheker.[5] In the 1990s, the routine use of the operating microscope in Root Canal Therapy has been advocated by Drs. Carr, Buchanan, Ruddle and others.[6-11] At the same time, Periodontists such as Dr. Shanelec and others had also reported the advantages of using the operating microscope together with finer (7-0 to 10-0) sutures resulting in better healing and lesser post-operative morbidity in various kinds Periodontal surgery. It was however not until the late 90s and the turn of the century, when the advantages brought by the operating microscope in all fields of General Dental Practice has been addressed by many authors such as Drs. AF Mora, D Clark, GA van As and others.[1, 12]

The advantages of the Dental Operating Microscope (DOM)

There are many advantages of using a DOM in clinical dentistry. The most commonly mentioned ones include the followings:

1. Precision in diagnosis and treatment
2. Ergonomics
3. Digital documentation
4. Patient communication and education

Precision in diagnosis and treatment

Thanks to the magnifications as well as the coaxial illumination system provided by the DOM, even subtle changes can be detected during clinical examination. For examples, cracks in posterior teeth(Fig. 1a-b), colour changes due to recurrent caries under old restorations or small carious lesions under marginal ridges (Fig. 2a), small remaining supra-gingival and sub-gingival calculus (Fig. 6a).

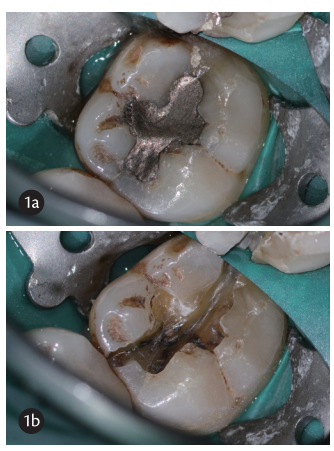


Fig. 1a Crack in the posterior region where illumination may be compromised with ordinary dental operating light. With the DOM, cracks were visible at the distal and mesial marginal ridges. Fig. 1b After the removal of the old amalgam restoration, the crack was found to extend all the way through the mesio-distal width.

Clinical Theme

Apart from the ability to detect a lesion at its early stage, restorative treatment can be done minimal invasively if indicated (Fig. 2a-f). It is a day-to-day practice for general practitioners to place tooth- coloured direct restorations. Under high magnification and good illumination, better marginal adaptation and finishing of restorations can be achieved. While it is often time-consuming to create a proper anatomical contour, it would be frustrating for the clinician if he/she found the beautifully created anatomical form vanished after occlusal adjustment. By accurately visualizing the contour of the remaining tooth structure under magnification during composite placement, the necessity of extensive occlusal adjustment can be reduced or sometimes eliminated (Fig. 3a-f, 10).

Fig 2a-f. (2a) Caries showing as a dark shadow under marginal ridges of the tooth 25 which may be easily missed in bitewings radiograph (2b). (2c-e) Intra-operative images. (2f) 18 months post-op.

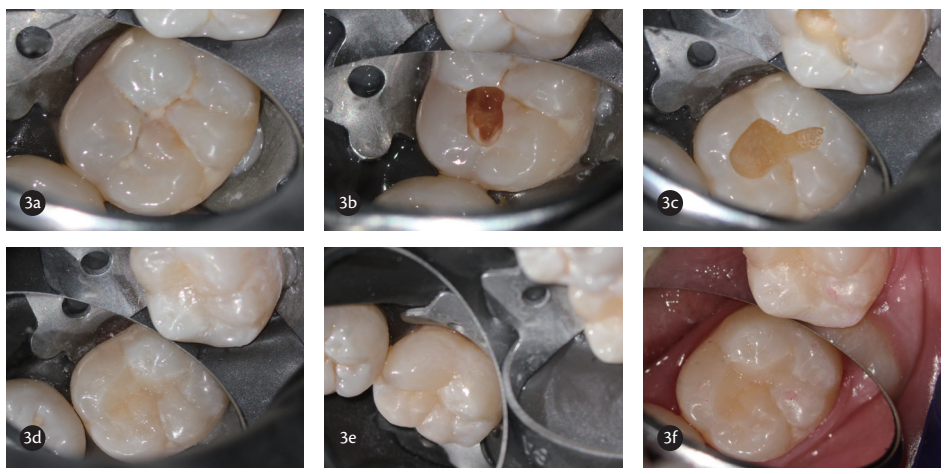


Fig. 3a-f (3a) caries under the partially lost fissure sealant as evident from the slight subsurface greyish discoloration. (3b-c) extension of the caries. (3d-e) anatomical features re-established following the original tooth contour. (3f) minimal occlusal adjustment and finishing needed after rubber dam removal.

It is generally agreed that one of the most important features of fixed prosthodontics is the marginal adaptation of the restoration. Although there is no consensus about the clinically acceptable marginal gap, some authors suggested the range from 50 to 120µm14, which is well below the average unaided human eye acuity of 200µm. With the help of the DOM, the resolution is much improved. Although some experienced clinician may be able to detect a marginal discrepancy of about 40µm by tactile sense using a fine probe, it would be much more predictable and consistent under the DOM for all practitioners. For example with 10X magnification the resolution will be improved to about 20µm. The proper marginal adaptation of the restoration can be verified before cementation to facilitate future plaque control so as to enhance long-term gingival health and longevity of the restoration. (Fig. 4a-f)

Fig. 4a-f (4a) Exposed old crown margin. (4b) Preparation for new all ceramic crown. (4c) Marginal adaptation checked before cementation. (4d) Immediate post-op. (4e) One year post-op. (4f) Eight years post-op, gingival health maintained.

CAD/CAM dental restorations fabricated by digital workflow has gained popularity in recent years. It has been shown that tooth preparation with smooth and regular surfaces are easier to be captured by light scanners and replicated by CAM process.[15]

Fig. 5a-c (5a) Tooth preparation with smooth surfaces, margin and internal line angles. (5b) Good marginal adaptation. (5c) Cement line barely visible after cementation even with 13X magnification.

During routine scaling, non-surgical as well as surgical Periodontal treatments, small supragingival and subgingival calculus can easily be visible under magnification and good illumination. With proper use and positioning of various dental mirrors, the clinician will be able to gain visual access to difficult to reach areas such as furcations and distal surfaces of last molars. (Fig 6 & 7)

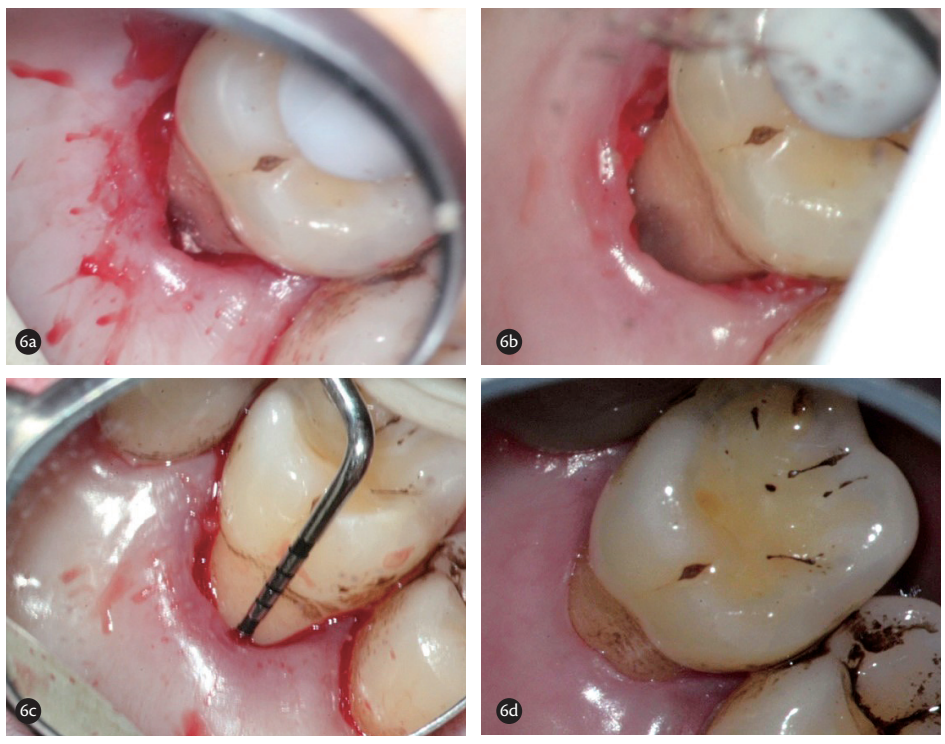


Fig. 6a-d (6a-c) Enhanced vision during non surgical Periodontal treatment. (6d) 4 months post-op.

The advantages brought by the DOM in the field of endodontics cannot be overemphasized, as Endodontics pioneered the use of this equipment. From preparation of the access cavity, removal of any calcification, identification of canal orifices, extra-canals and bifurcations, cleaning and shaping of the irregular canal spaces, to three dimensional obturation of the root canal systems, the DOM has changed the procedure once mainly relied on tactile sense to visually enhanced treatment.

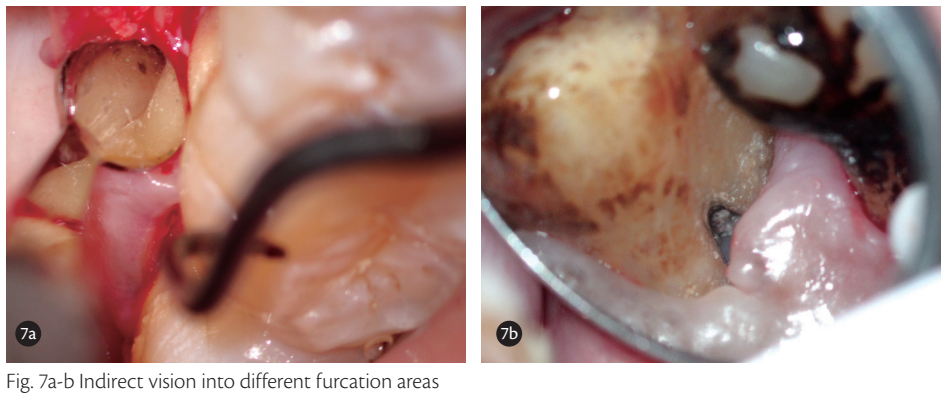


Fig. 7a-b Indirect vision into different furcation areas

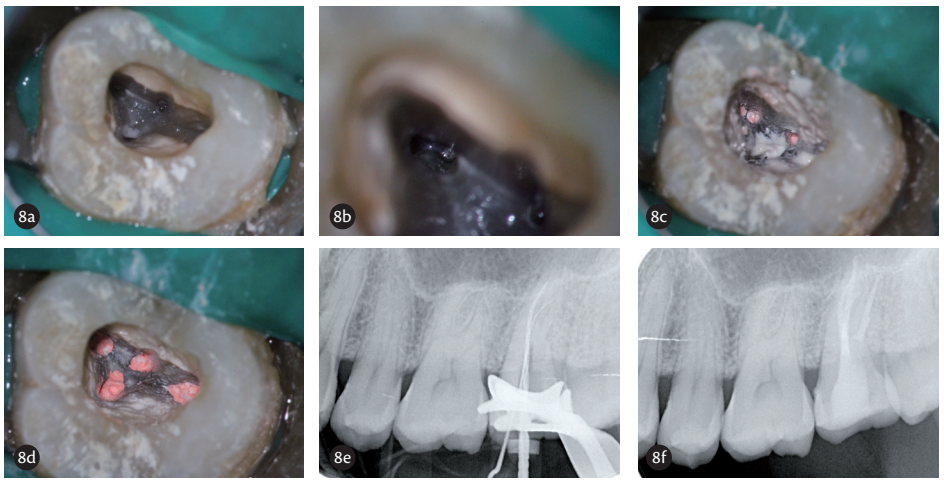
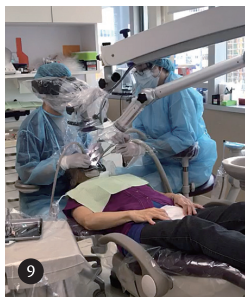


Fig. 8a-f RCT of tooth 27. Location, cleaning , shaping and obturation of the three MB canals

Ergonomics

A study had shown 87.2% of dentists surveyed to have experienced some form of musculoskeletal pain, particularly in the lower back, neck and shoulder,16 which is one of the most common occupational hazards to dental professionals resulted from prolonged and static poor posture. With the proper use of the DOM together with arm supports, the head, neck and back of the clinician are maintained straight and upright, shoulder is relaxed (Fig. 9) so that this major occupational hazard can be minimized.



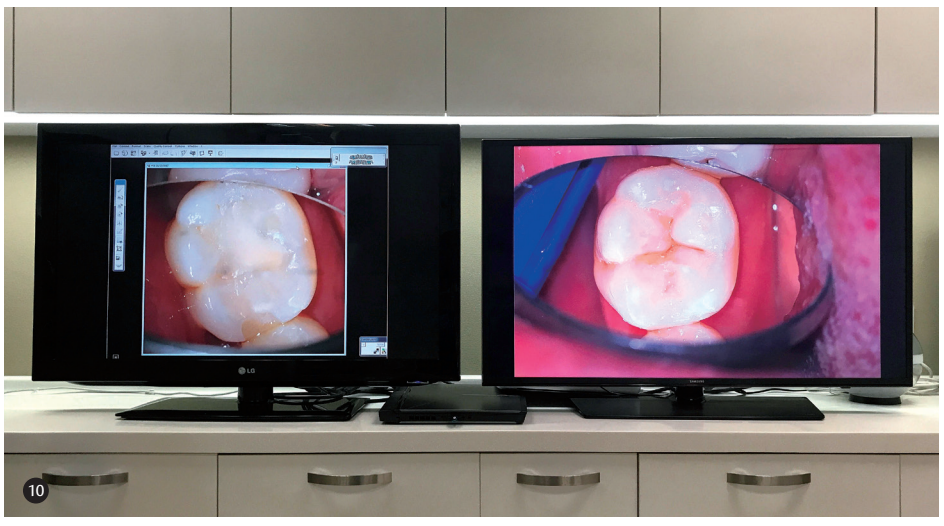
Ergonomic position of the clinician working with the DOM minimizing occupational hazard. An external digital SLR camera was attached on the right hand side of the DOM.

Digital Documentation

With the modern design of the DOM, internal or external imaging equipment such as digital cameras or even smart phones can easily be attached to the system. Digital still images and videos can then be taken or recorded and saved as a digital record for future clinical references or shared among referring doctors (Fig. 9).

Patient communication and education

It is often said that a good picture worth a thousand words, a good video is often self-explanatory and provides even more information to patients. Pre-op, intra-op and post-op images and videos can be shown to the patient on properly placed monitors (Fig.10). In the era of information technology, this could not only increase the patient acceptance to treatment, but also provide evidence as to why the proposed treatment is necessary (Fig. 1) and become an important patient record. Other useful information can be shared with patients, such as monitoring oral hygiene status by comparing pictures taken in different appointments, soft tissue changes, extent of tooth surface loss and recession.



Communication with patients is enhanced with monitors showing pre-op and post-op images side by side.

Conclusion

DOM is one of the most versatile pieces of equipment that brings significant benefits to all daily clinical procedures. The Microscope-centered General Dental Practice is based on these benefits that could radically change the philosophy of a clinical practice. Although there is a certain amount of investment involved and a learning curve to overcome, with experience the author considered it as an equipment of highest return of investment not only financially, even more importantly in terms of occupational health and job satisfaction of the clinician.

(The references used in this article can be found in insert page)

Do you want to learn more about microscope in this case?
Don't miss the in-depth course of Dr. Leung Siu Fai, Eric on 17/3, 21/3, 24/3.

To Veneer or not to Veneer: What, When and How?

by Dr. Fang Tak San, Daniel, Specialist in Prosthodontics
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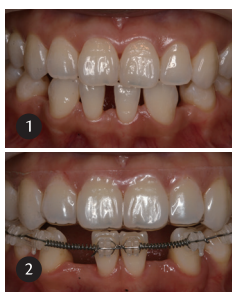
Clinical Theme

Veneering is the modern flagship of minimally invasive dentistry. With the progress of dental materials we can now offer excellent aesthetics and protection to natural teeth with minimal interventions. Read more about the art and science of veneering in the cases of Dr. Daniel Fang.

Aesthetics has been the single most prominent motivating factor for a patient to seek dental treatment. We as dentists have the privilege to offer the best possible option in the light of the advances in dental materials and technology. We also have a moral obligation to consider the biological cost in order to achieve the desirable outcome.

When our patients come to us asking for treatment to improve the appearance of their teeth, there are a number of approaches. Where there is dentoalveolar discrepancies, we can offer orthodontic re-alignment (Figs 1, 2). A thorough and meticulous analysis is required to assess if there is an element of skeletal discrepancy. Orthognathic surgical option should then be considered to achieve an optimal result.



If there is discoloration of extrinsic nature, like staining from beverages, we may use a wide variety of whitening systems: chairside, home or a combination of both. If the discoloration is from within the tooth, say after root canal treatment, the breakdown products of pulpal tissue would cause discoloration. We can offer internal bleaching using hydrogen peroxide, carbide peroxide with walking technique (Figs. 3, 4).

If we need to mask, labial partial coverage veneers and full coverage crowns are available. The delicate question is how to choose the most appropriate solution at a given situation.

All dental restorations has a limited lifespan. If we start the foot wrong by unnecessarily cutting away tooth structure in making a crown, we would have replace with another crown by cutting more tooth structure in due course. It is worthwhile to think twice.

With the advances in dental materials, glass ceramics infiltrated with particles like lithium disilicate by ceraming process, doubles the flexural strength of feldspathic porcelain. With injection moulding technology (Empress e.Max, Ivoclar), labial coverage veneer can be fabricated in thin section. As a result, tooth preparation can be more conservative, and sacrifice of healthy tooth structure can be kept to a minimum.

Does veneer work?

Quirynen et al. (1998) revealed minimal plaque retained over the porcelain veneers, due to smooth glazed surface discourages plaque retention. Friedman (1998) reported a 15-year study of over 3500 veneers, with overall success rate of 93%. Peumans et al. (2004) performed a 10-year prospective study of 87 veneers on 25 patients by a single operator. The authors indicated 11% minor fractures, all reparable. 4% veneers required replacement, showing a survival rate of 96%.

The question begs if such good results can only be attained by experienced clinicians. Murphy et al. (2005) reported a 5-year retrospective study of 62 veneers on 29 patients, all placed by undergraduate dental students. They showed a 6% debond rate, 5% fracture, with a success rate of 89%.

When do we consider veneer?

There is a wide range of scenarios where veneer is indicated to produce an optimal overcome (Figs. 5 – 10).

Minor imbrications

Shade improvement

Hypoplasia

Disproportionation and diastema

Akio has a lovely smile, but there is something not quite right with her teeth (Figs. 11, 12).

Chairside mock-up is performed with composite to give the patient a glimpse of the final outcome, and also to evaluate the patient's expectations (Figs. 13 – 14).

Once the patient is pleased with the mock up, it is copied to create the final veneers (Figs. 15 – 18).

Now she has nice teeth with the correct proportion to complement her lovely smile.

End Thought

We have looked at the various options available when our patients want to improve their smile. We have discussed when to do it, and a glimpse of how to do it. Even with the advances in dental materials and technology, we realize that no restoration is permanent and nothing last forever, the prudent clinician should consider the biological cost involved. One thing I want to leave with the reader is this, "Will our patient's oral health be better off when we have finished?"

Do you want to find out more?
Don't miss the opportunity to learn from Dr. Fang curated workshop on veneers next year April at CDE!

CBCT- our X-ray eyes

by Dr. Wong Man Cheong, Dennis
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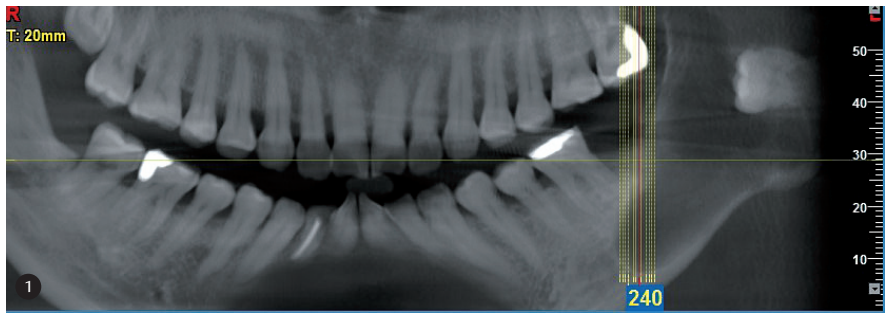
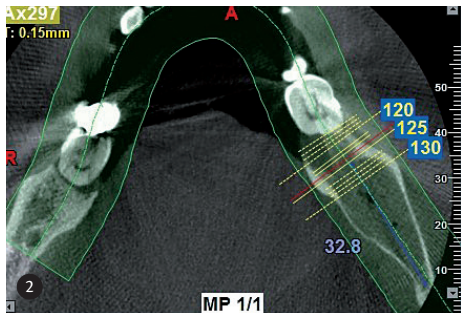
Superman was said to have X-ray vision and was able to see through walls. For the rest of us however, Computed Tomography is the only way to see behind complex anatomy and identify signs of pathology that can easily go undetected in clinical examination! Learn more about the secrets of CBCT and how to make the most of it in your clinical practice!





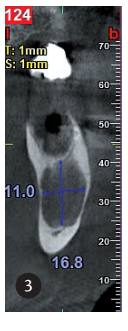


Fig. 1 Reconstructed OPG revealing a large cystic lesion involving the left side of mandible
Fig. 2 Axial section showing the mesial-distal dimension of the lesion
Fig. 3 Coronal section showing the superior-inferior and buccal-lingual dimensions of the lesion at 37 region

Clinical Theme

Radiology is a specialty that uses a variety of imaging techniques, such as, X-ray radiography, computed tomography (CT), ultrasound, and magnetic resonance imaging (MRI), to diagnose diseases.

Through the marvels of radiography and radiology, dentists can retrieve information they could have never found through clinical examination only. Therefore, radiology becomes an essential tool in making a proper diagnosis and formulating a treatment plan for the patient.

Cone-beam computed tomography (CBCT)

CBCT has been developed specifically for use in the oral and maxillofacial region. It employs a cone-shaped x-ray beam and a special image receptor. The beam orbits around the patient one time, and obtains the information in a cylindrical volume (the field of view, FOV). The computer then collates the information into tiny cubes (voxels). The smaller the voxel size is, the better the image resolution will be. Computer manipulation (multiplanar reconstruction) allows the images to be separated into axial, coronal and sagittal views. These views are shown simultaneously and can be scrolled through on the computer screen, which allows the anatomy and pathological conditions being viewed in different planes. Moreover, it is possible to reconstruct a panoramic image by plotting the curvature and shape of the dental arch in the multiplanar view.

CBCT is very useful in the investigation of bony lesions, TMJs, third molars, tooth fractures, and facial skeleton fractures. Moreover, its diagnostic and treatment planning software allows treatment simulation and computer-guided surgery for complex procedures like dental implants. It can assist in implant planning via virtual implant placement, surgical implant guide and prosthetic design.

The American Academy of Oral and Maxillofacial Radiology (AAOMR) recommends some form of cross-sectional imaging should be used for implant cases, and CBCT is the choice for gaining this information for patients receiving dental implants.

However, CBCT exposes the patient to higher radiation dose compared with intra-oral radiography and orthopantomogram (OPG). Therefore, it should only be performed in cases where the risks of radiation exposure are outweighed by the diagnostic and treatment benefit.

Different clinical situation requires different FOV. A restricted FOV minimizes the radiation exposure. For instance, an FOV of 5cm x 5cm is adequate for the evaluation of a single tooth before, during or after endodontic treatment; an FOV of 11cm x 8cm covers both maxilla and mandible; an FOV of 15cm x 15 cm reveals the maxillofacial skeleton. CBCT is therefore the modality of choice for pre-operative assessment of a broad spectrum of dental treatment.

Case Study

A 60-year-old male patient complained of unhealed wound and foul smell from 37 region. He was diagnosed with severe periodontal disease associated with tooth 37 during recent dental check-up and received scaling three months ago. The tooth was extracted afterwards due to excessive mobility. There was no history of pain or discomfort. Medical history was unremarkable.

Intraoral examination revealed missing tooth 37 with an unhealed socket. On palpation, there was mild expansion of the buccal and lingual cortical plates extending posteriorly from 37 region to the retromolar area.

CBCT revealed the presence of a large radiolucent lesion involving the left side of mandible, extending from the apical region of tooth 36 to the body, angle, and ascending ramus of the mandible. The lesion was around 5cm (L) × 2cm (W) x 4cm (H) in dimensions. It was primarily solitary/ unilocular, and had caused thinning of the inferior and anterior border of the body and ramus of the mandible. An impacted tooth 38 was displaced inferiorly and posteriorly approximating the inferior border of the angle of mandible.

Based on the clinical and radiographic features, a provisional diagnosis of dentigerous cyst was made, while the differential diagnoses were keratocystic odontogenic tumor, ameloblastic fibroma and unicystic ameloblastoma.

The discrimination of dentigerous cyst from an enlarged dental follicle, keratocystic odontogenic tumor, ameloblastic fibroma and unicystic ameloblastoma is difficult and hence careful observation of site, size, attachment with the involved tooth, and radiodensity aids in proper diagnosis of the pathology.

The patient was referred to an oral and maxillofacial surgeon for immediate management. Histopathological examination confirmed the lesion is a dentigerous cyst. The cyst was enucleated along with extraction of the impacted tooth 38.

Dentigerous cyst is a pathological and developmental odontogenic cyst which attaches or envelops the crown of an unerupted or impacted tooth. Mandibular third molars, maxillary canines and mandibular premolars are commonly involved.

It usually remains asymptomatic and rarely cause profound enlargement of the associated jaw. Therefore, it is often diagnosed incidentally during radiological examination. Rarely, these cysts get secondarily infected and patient presents with symptoms such as pain and swelling.

Radiographically, the most important characteristic in aiding diagnosis of dentigerous cyst is that these cysts attach at the cemento-enamel junction (CEJ) of the unerupted or impacted tooth. Some dentigerous cysts are eccentric and develop from the lateral aspect of the follicle and hence occupy an area beside the crown. Its shape is circular, and the outline is smooth and well-defined. Its internal aspect is uniformly radiolucent.

Expansion of the dentigerous cyst is related to the level and extent of epithelial proliferation, bone-resorbing factors, and the osmolality of the cyst fluid. Continued expansion of cyst can have possible sequelae like bony expansion (with subsequent facial asymmetry) and displacement of teeth. Cystic lesion associated with impacted third molar can result in "hollowing-out" of the ascending ramus, and displacement of the impacted third molar posteriorly and inferiorly.

Conclusion

Dental imaging is an essential part of clinical dentistry. The knowledge of anatomy, image acquisition and interpretation are mandatory to obtain the correct information for proper diagnosis and treatment planning.

If you are not having a pair of X-ray eyes, please go for a CBCT!

(The references used in this article can be found in insert page)

Do you want to learn more about radiology, computed tomography (CT) and magnetic resonance Imaging? Don't miss Dr. Wong's seminar on 6/1 & 3/2.

Advanced periodontal and peri-implant hard and soft tissue augmentation for improved long-term prognosis

Clinical Theme

by Dr. Lai, Ian Albert, Specialist in Periodontology
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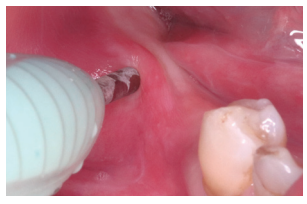
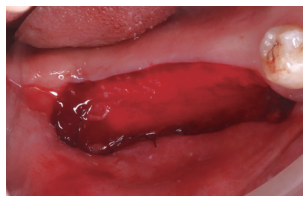
Establishing health is the primary objective of periodontal therapy, but periodontal regeneration is a modern science which can take our service to patients to new heights. Read more about the art and science of this "next step" in the article and case presentations of Dr. Lai!

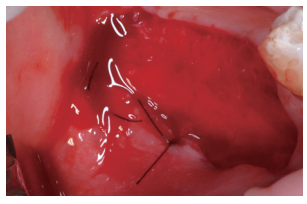
Implant sites with a band of <2mm keratinized mucosa (KM) were shown to be more prone to brushing discomfort, plaque accumulation, and peri-implant soft tissue inflammation (Souza et al., 2016). Free gingival graft (FGG) technique can be used to increase the width of keratinized tissue before implant placement to improve long-term prognosis of implant-supported prostheses by maintaining tissue stability. FGG for implants exhibiting lack of KM is a viable treatment option to reduce mucosal inflammation and to maintain crestal bone level in the short-term (Oh et al., 2016). This posterior region exhibited a thin band of keratinized tissue on ridge crest. The treatment plan included a 3-unit implant bridge supported by 2 implants. A free gingival graft was utilized in the molar area to increase the amount of keratinized tissue.



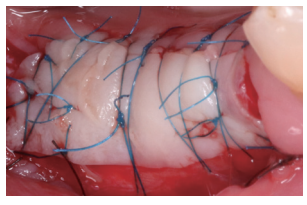
Pre-op photo showing the lack of keratinized tissue



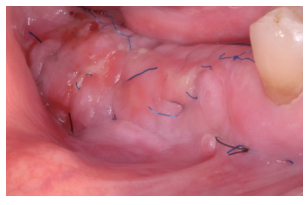
Split thickness flap design



Apically positioned superficial layer fixed by sutures



Free gingival graft (FGG) harvested from lateral palate fixed by various sutures

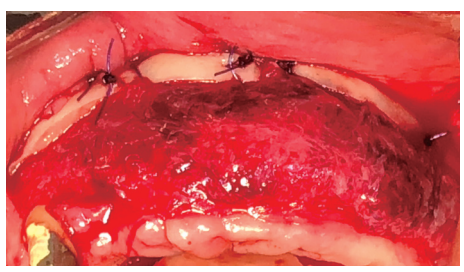


Ten days post-op

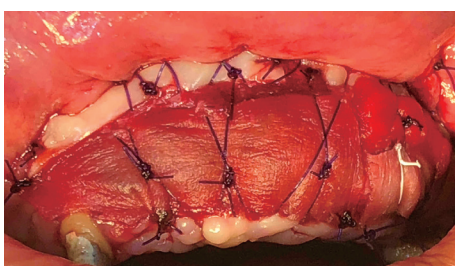
Six weeks post-op

A large area of mucogingival alterations may occur after advanced regenerative ridge augmentation procedures, resulting in a severe displacement of mucogingival junction (MGJ) and loss of vestibular depth. One of the techniques that can be used to increase keratinised tissue and vestibuar depth has been described (Urban et al., 2015) by placing a strip gingival graft at the apical end of the surgically created bed and a xenogenic collagen matrix between the strip and the ridge crest. Below shows one of my cases of soft tissue augmentation for a long-span implant-supported prosthesis with prior guided bone regeneration (GBR) and implant placement.

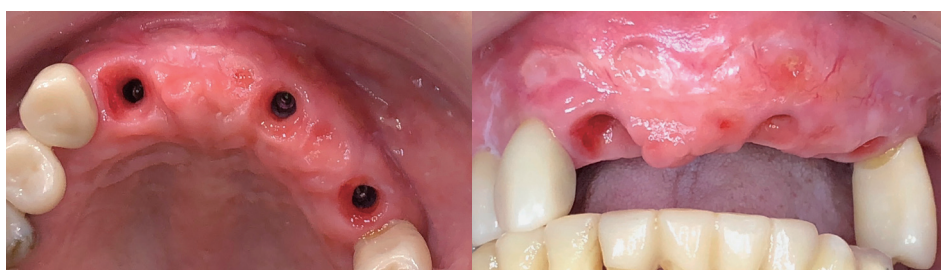
Lack of keratinized tissue and vestibular depth



Split-thickness flap design with a strip gingival graft fixed apically



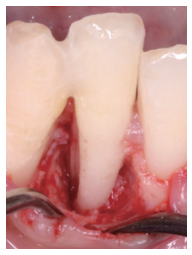
Xenogenic collagen matrix fixed between the strip and ridge crest



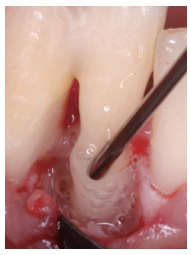
Increased keratinized tissue and vestibular depth for long-term tissue stability and oral hygiene practice

Pre-op photo showing deep probing depth

Pre-op CBCT 3D reconstruction



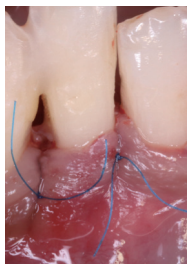
Intrabony defect



Enamel matrix derivative

Xenogenic bone graft

While an important goal of periodontal therapy is to reduce pocket depth in order to prevent further disease progression, the ultimate achievement of periodontal therapy is the regeneration of the lost periodontal tissues, which may improve the long-term prognosis of severely periodontally compromised teeth. After initial periodontal therapy, selected cases with optimal oral hygiene may benefit from periodontal regenerative surgeries performed with papilla preservation flaps (PPF) and minimally invasive surgical techniques using a wide range of micro-surgical instruments and applying various regenerative biomaterials. Minimally invasive surgical approaches have been shown to be very effective in periodontal regeneration when used in combination with various biomaterials. Enamel matrix derivative (EMD) can be used with bone graft for regeneration of intrabony defects, utilizing simplified papilla preservation flap (SPPF) technique (Cortellini et al., 1999). Such a case is illustrated here (upper right).

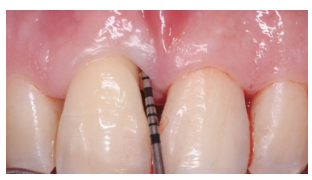


6/O Polypropylene sutures

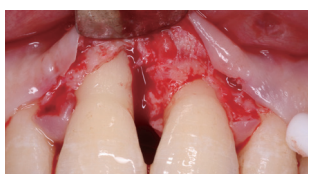
One-year post-op CBCT 3D reconstruction

Connective tissue graft wall technique (Zucchelli et al., 2014) combined with coronally advanced flap (CAF) can be employed to limit gingival recession (improve root coverage) and clinical attachment levels in periodontal regenerative surgeries for intrabony defects. The dense subepithelial connective tissue graft (SCTG) derived from de-epithelialization of a free gingival graft (FGG) from lateral palate might act as a relatively rigid barrier to compensate for the lack of buccal bone wall. It may potentially limit buccal and interdental soft tissue collapse inside the bony defect and help blood clot stabilization inside the supra- and infra-bony defect components (Zucchelli et al., 2017). The SCTG may limit post-surgical soft tissue shrinkage and increase soft tissue, resulting in a more stable long-term soft tissue levels. Long-term strict periodontal maintenance must follow any non-surgical and surgical periodontal therapy, although the maintenance care might be relatively easier following corrective periodontal regenerative surgeries. Guided tissue regeneration (GTR) with xenogenic bone graft and resorbable collagen membrane was carried out concurrently with a coronally advanced flap (CAF) and a connective tissue graft wall underneath (Figures 20-26).

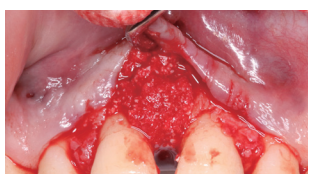
(The references used in this article can be found in insert page)



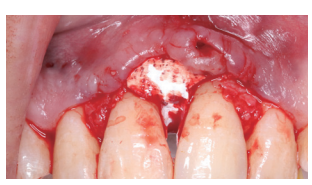
Pre-op photo showing deep probing depth of 8mm



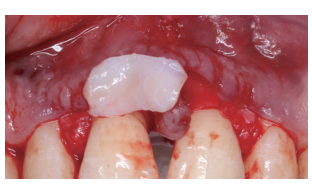
Intrabony defect



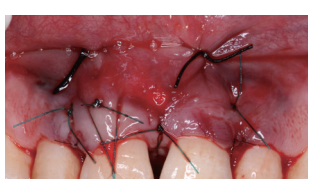
Xenogenic bone graft



Xenogenic collagen barrier membrane



Connective tissue graft



Coronally advanced flap

One-year post-op photo

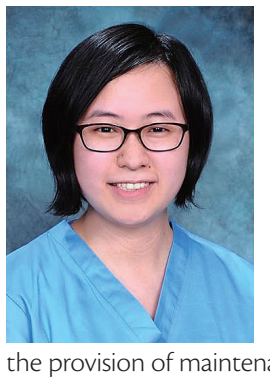
Do you want to learn more about the strategies and techniques involved in Advanced periodontal and peri-implant hard and soft tissue augmentation? Don't miss the in-depth course of Dr. Lai on 23/2 & 9/3.

Periodontal Maintenance: A Brief Review

By Dr. Wong Man Sai, Ruby, Specialist in Periodontology

Periodontal patients are patients for life, but whether this life will be lived with healthy gums depends primarily on a proper maintenance programme! Read more about the importance of periodontal maintenance and how to design a successful programme to guard your patients' periodontal health!

Clinical Theme



In a recent review article, it is stated that one of the reasons for periodontal patients being not compliant to their maintenance programme could be "general dentist taking care of their periodontal needs" (1). In other words, sometimes the general dentist may be taking over the periodontist's role in the provision of maintenance care. This is understandable in many levels, and is not necessarily problematic, as long as proper communication and understanding exist among all three parties (patient, general dentist and periodontist), and that a sufficient level of care is offered to the patient. To achieve long-term periodontal stability under such condition, the general dentist must be ready to provide supportive periodontal therapy as indicated. A periodontal maintenance appointment is very different from a routine dental examination, scaling and prophylaxis. This article is a brief review on standard periodontal maintenance care.

After periodontal treatment, no matter non-surgical periodontal treatment (NSPT) only or surgical treatment done, we will always arrive at the periodontal maintenance phase. The maintenance phase has the following aims:

- To re-evaluate periodontal condition, and identify any recurrence
- To motivate patient on plaque control and reinforce oral hygiene instructions (OHI)
- To provide supportive therapy
- To update treatment plan, if necessary

Why need maintenance?

The benefits of maintenance

The importance of regular periodontal maintenance cannot be overemphasized. On one hand, long-term stability after periodontal therapy is possible if a periodontal patient's oral hygiene is upheld and is compliant to regular maintenance program. This has been demonstrated by numerous classical studies (2-7). On the other hand, without satisfactory plaque control and without professional supportive care, any improvement achieved from previous periodontal therapies would gradually disappear.

Lack of maintenance

Classical studies have also shown that regardless of the surgical technique involved, the periodontal treatment done was ineffective at preventing periodontal disease recurrence among non-compliant patients (3, 8-10). Without prevention intervention, pre-treatment subgingival microbiota was also found to repopulate the gingival sulcus or any residual pockets in weeks (11-14). This could mean recurrence of disease and downhill of the condition. It has also been shown that treated patients who do not return for regular recall are at 5.6 times greater risk for tooth loss than compliant patients (15).

A lack of maintenance care could be related to the compliance problem of the patient, which includes upholding personal oral hygiene care and compliance to the recommended maintenance programme.

Compliance of patients to periodontal maintenance care

Compliance can be categorized into three groups according to patient behaviour: full compliance, erratic compliance, and non-compliance. It has been concluded that, worldwide and in general, about only one-third of treated periodontitis patients are fully compliant to periodontal recall regimens (1).

Compliance results in a different rate of tooth loss during supportive periodontal therapy. Numerous studies found 3-5% tooth loss among compliant patients over their study period (7 to over 10 years). This contrasts to 12-14% tooth loss in non-compliant patients (16-24).

In conclusion, without supportive periodontal therapy and without patient's compliance to the maintenance programme, periodontal treatment will eventually fail.

What are included in a periodontal maintenance appointment?

A periodontal maintenance appointment is, in the writer's opinion, a busy appointment. The following should be updated

- Medical history
- Smoking habit
- Periodontal and dental charting
- Special investigation, if indicated (e.g. radiographs, EPT)

These are followed by:

- Update of treatment plan, if necessary
- Explanation of clinical findings
- Oral hygiene instructions and patient motivation
- Professional cleaning and intervention treatment, if indicated
- Review of appointment interval

It is suggested that after the completion of periodontal therapy, maintenance interval starts with a frequency of 3 months, and if stable, can be gradually increased by increments of 1 month (25). Therefore, a periodontal maintenance appointment is periodontally-oriented, and involves detailed periodontal examination, highly-personalized instructions as well as treatment for patients according to individual condition and susceptibility. Debridement is also carried out according to the current condition (e.g. the pocket depths). It is indeed a continuous form of re-evaluation, treatment planning and intervention.

Case sharing

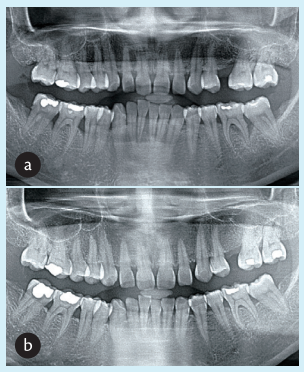
We are going to share a few cases to demonstrate the importance and success of periodontal maintenance care, and the result of lacking thereof.

(The references used in this article can be found in insert page)

Do you want to learn more about carrying out periodontal maintenance procedure in your daily practice?
Don't miss the upcoming lecture "Maintenance care for your periodontal patients in general practice: preserving outcome, reducing risks" by Dr. Wong on 20th April 2021!

Case 1

A 32-year-old Chinese lady (non-smoker, clear medical history) was referred from her family dentist for management of her periodontal disease in 2014. The diagnosis at that time was generalized aggressive periodontitis (would be Stage III Grade C with the new classification system). A course of non-surgical periodontal therapy was carried out. The healing response was satisfactory. No surgical treatment was necessary. The patient was then provided with a periodontal maintenance program, with interval ranging from 4 to 6 months. Her oral hygiene acceptable. The OPG taken 6 years later showed evidence of bone fill at previous angular defects, whereas clinical parameters were stable. This case shows that with the provision of proper maintenance care and compliance of patient, the success of non-surgical periodontal therapy can be sustained.



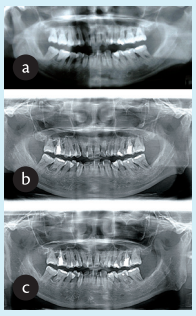
OPGs taken in 2014 (a) and 2020 (b). Clinical photos taken in 2017.

Case 2

A 46 yr/o Chinese female with unremarkable medical history first presented in 2006. She was diagnosed with severe chronic periodontitis. There was generalized severe bone loss and deep pockets; multiple molars had poor prognosis. Treatment goals included "to keep teeth of questionable prognosis for as long as possible".

She received non-surgical and surgical treatment, including root resections. Thereafter, she received periodontal supportive care regularly in our specialist clinic. Tooth 27 was finally extracted in year 2019, which was 13 years after our first examination with the patient. The rest of the dentition is relatively stable and remains functional and non-eventful. There may be a need for prosthesis in the future should more tooth loss occur; but at the moment, the patient (who is now 60-year-old) is still enjoying food with sufficient chewing strength.

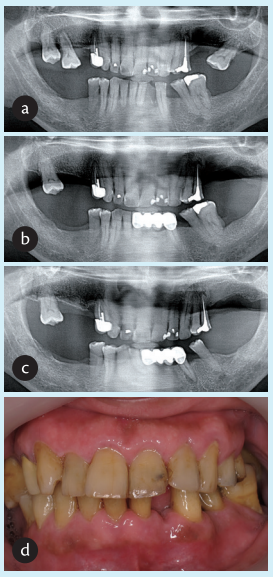
This case demonstrated that even for patients with severe bone loss and multiple teeth with poor prognosis, the teeth may still be maintained and even be used in comfort after years. For cases like this, the preservation of questionable teeth can make a difference on the need for prosthesis, and prepare the patient better before definitive prosthodontics treatment planning in the future.



OPGs taken in 2006 (a), 2012 (b), and 2017 (c) respectively. Sufficient functional units are preserved, giving adequate chewing ability to the patient.

Case 3

This case shows a periodontally susceptible patient being non-compliant to maintenance care. Mr. T is a patient with Type II diabetes; he is also a smoker (half pack a day for over 40 years). Non-surgical periodontal treatment was first provided in the year 2013, followed by reviews. Patient failed to show up after first re-evaluation at 3 months post-op. In 2018, patient came back for maintenance care, thereafter disappeared once again until late 2020. Mr. T admitted that he has financial problem, and that he cannot afford prostheses for the missing teeth. In the past few years, he felt chewing function still acceptable. Only until now has he found chewing strength inadequate. In this latest visit, we noted a tooth is lost (#36) and there is also further bone loss in particular the lower anterior teeth. More tooth loss is inevitable, and prosthodontics planning will be needed once the periodontal condition is under control.



OPGs taken in the year 2013 (a), 2018 (b), and 2020 (c) respectively. (d) baseline clinical photo showing poor oral hygiene and generalized gingival inflammation.

Complete denture - Mission Impossible?

by Dr. Wan Kong Yuk , Annie

Ensuring stable and well-functioning full dentures is a challenging task, but is it a mission-impossible? Dr. Annie Wan believes it is not – as long as some essential principles are followed! Read below the principles and techniques that may help you achieve success with full dentures!

1a 1b 1c

Clinical Theme

All are lower complete dentures! What are the differences?

Generally speaking, a functional denture is a prosthesis which can help the patient to eat, to speak and wear with no difficulty. It might sound simple but it is certainly not easy! Without any teeth or implants the support, retention, and stability of the denture relies solely on the mucosa and the ridge of the individual.

The uses of different impression trays and impression techniques, can result in entirely different denture base. There is significant difference in the images above:

1a Underextended denture without the use of a proper custom tray
1b Conventional impression technique to ensure optimum support
1c Abe suction denture technique to ensure optimum retention

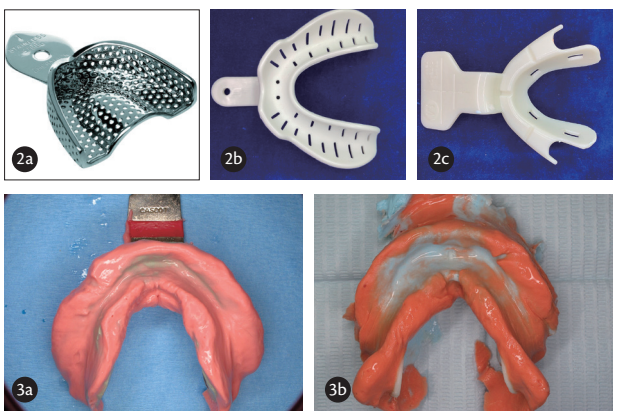
It is not uncommon to see dentures become loose during speech, eating, or opening mouth wide. Patients may also complain of dentures rocking, shifting, falling of the upper or lifting of the lower denture. There are numerous causes for loose dentures. Accurate diagnosis is essential but more important is to know how to avoid the problems!

A good impression is the beginning and foundation of a successful denture. It is a positive representation of the denture base itself and should cover all the available denture bearing area. Basically, the construction of a retentive denture base relies on two important factors – close mucosal contact and border seal. These two concepts that we learned in undergraduate may sound familiar and old-school, but they are still the fundamental concepts in removable complete denture construction. Even retained with implants, the denture base should cover all the denture bearing area to give adequate support. If not, there will be more complications, such as fracture of the denture base and even the loss of implant.[1]

1. What is the purpose of primary impression?

Primary impressions are made with stock trays and their function is to outline the denture- supporting area, record the full extent of the vestibule and certain landmarks. The choices of impression trays and materials render different denture bases. Not every stock tray (Fig 2a, 2b, 2c) can cover all the denture bearing area, so in some cases they should be modified with more viscous material until the required area is completely covered. In Abe suction denture technique, the use of a specialized tray, Frame Cut Back tray (Fig 2c, 3b), gives a denture base that does not follow the usual anatomical contour. It is used to record the natural form of the retromolar pad region and the buccal shelf area in mandibular rest position, to provide maximum retention- suction.

Alginate (Fig 3a, 3b) is the most frequently used impression material, but it has low tear strength. Impression compound or polyvinylsiloxane are commonly used to modify the tray allowing form customization.



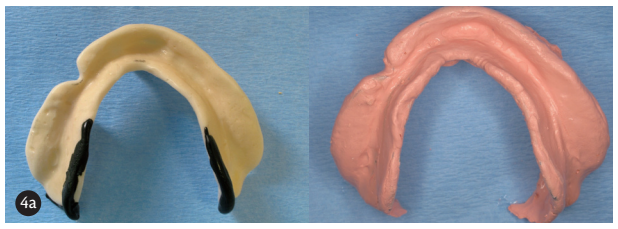
2a 2b 2c

3a Conventional technique
Impression compound with alginate

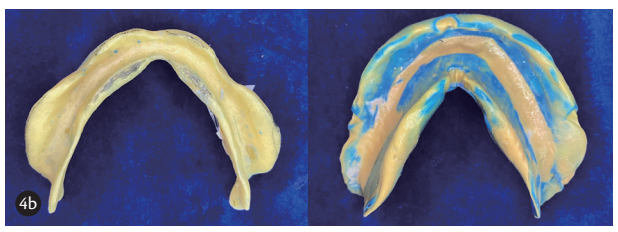
3b Abe technique
Tray & syringe alginate

2. Is custom / special tray necessary?

The objectives of the working impression are to deform the tissue to an appropriate amount, while having a close contact with the mucosa. A properly designed custom/ special tray (Fig 4a, 4b) and a good working impression is taken to record the details and not to over-distort the mucosa and vestibulum in order to gain optimum retention and support. The extension and fit of the tray should be confirmed in the mouth, as it should be stable and not impeding muscle activity. Zinc oxide eugenol, polyether, polyvinylsiloxane are the materials that are usually used.



4a Conventional Special tray — Conventional technique With Zinc oxide eugenol



4b Abe technique Special tray — Abe technique with Polyvinylsiloxane

3. Jaw relationship

A stable base which adapts well to the ridge is essential before recording the jaw relations. In more difficult cases such as patients with severely resorbed ridge, a more rigid base is more appropriate, for example with the use of a permanent base or a temporary acrylic base. If the base is loose, it is crucial to identify the cause and modify accordingly before proceeding.

There is little scientific evidence to support any particular concept in denture occlusion. The denture teeth must meet evenly to ensure that dentures are reseated towards the supporting tissue. If not, the dentures are going to be displaced every time the teeth are brought into contact.

If one follows the basic principles together with the use of proper techniques, a functional removable complete denture is a possible mission!

(The references used in this article can be found in insert page)

Excited to learn more about Complete Full Dentures on 11/6, 18/6, 25/6? Join the Hands-on course at https://www.cde.hk/courses/122

The HK ITI week: the great comeback of a classic!

ITI Campus Hong Kong

The ITI Education weeks have been flagship events, organised each year in few selected places of the world. The Hong Kong ITI week in particular was the first and only in Asia and one of the most successful, with hundreds of alumni and loyal fans all over the world. It was certainly no coincidence: it was a week with a great pedigree, founded by Professor NP Lang in 2009, who transplanted in Hong Kong the experience from 35 years of the "Les Diablerets" weeks in Switzerland and a lasting treatment philosophy of placing implants within a Comprehensive Care Plan. His successor, Professor Mattheos extended the philosophy with modern concepts of surgery and prosthodontics and the ITI HK Education week was an educational highlight every year, bringing together a dream-team of world class experts and an audience from all sides of the world!

The old classic is now coming back in September 2021! With all its heritage in comprehensive care, but revamped to address the new challenges of the era of digital practice, the ITI HK Education week of 2021 will introduce a brand new dream-team and many new concepts! Under the directing of Prof. Mattheos, the HK ITI week will bring you the pioneering duo from Geneva Prof. Irena Sailer and Mr. Vincent Fehmer, our old friend Prof. Bjarni Pjetursson from Iceland, Dr. Chatchai Kunavisarut from Bangkok and more to be announced soon!

Don't miss the explosive start of an new classic in September 2021!

Stay in touch for updates and news from the ITI week and ITIcampus HK in our page at: https://www.cde.hk/resources/124

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insight
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Dr. Ho King Lun, Dominic

13 A New Bone Level Bi-directional Cutting Implant - Features Standing for Immediacy
Dr. Chow Tak Kun

17 Day 2- Introduction Course of Implantology
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20 Model pouring
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March

2 In-House 3D Printing of Surgical Guide at Limited Cost
Dr. Chan Fuk Shing, Brian

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Dr. Lai, Ian Albert

17 Day 1- Introductory hands-on course on Microscope Enhanced Dentistry
Dr. Leung Siu Fai, Eric

21 Day 2- Introductory hands-on course on Microscope Enhanced Dentistry
Dr. Leung Siu Fai, Eric

24 Day 3- Introductory hands-on course on Microscope Enhanced Dentistry
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April

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20 Maintenance care for your periodontal patients in general practice: preserving outcome, reducing risks
Dr. Wong Man Sai, Ruby

25 Day 1- Dr. Nikos Mini Residency with live surgeries
Dr. Nikos Mattheos

17 Day 1- Master Class in Aesthetic Dentistry - Veneer
Dr. Fang Tak San, Daniel

24 Day 2- Master Class in Aesthetic Dentistry - Veneer
Dr. Fang Tak San, Daniel

May

8 Day 2- Dr. Nikos Mini Residency with live surgeries
Dr. Nikos Mattheos

9 Day 3- Dr. Nikos Mini Residency with live surgeries
Dr. Nikos Mattheos

22 Day 4- Dr. Nikos Mini Residency with live surgeries
Dr. Nikos Mattheos

23 Day 5- Dr. Nikos Mini Residency with live surgeries
Dr. Nikos Mattheos

25 The new periodontal disease classification and the positive impact to your pratice
Dr. Lai Man Lung, Stanley

June

5 Day 1- Master Course:
Decision Making in the Aesthetic Zone
Dr. Nikos Mattheos & Dr. Martin Janda

6 Day 2- Master Course:
Decision Making in the Aesthetic Zone
Dr. Nikos Mattheos & Dr. Martin Janda

11 Day 1- Complete Full Denture
Dr. Wan Kong Yuk, Annie

18 Day 2- Complete Full Denture
Dr. Wan Kong Yuk, Annie

25 Day 3- Complete Full Denture
Dr. Wan Kong Yuk, Annie

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