

Issue 001 | Jan 2022

 **DENTAL
DIARIES**

P.7

Lifestyle

Photography as a Hobby

**QUARTERLY
MAGAZINE**

HONG KONG & MACAU EDITION

2022

P.10

Pain Experience after Dental Implant Placement

Compared to Tooth Extraction

“

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BLX for Immediate
Placement in Posterior
Mandibular Area with
Sealing Socket Abutment

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The Overlay Case

(Occlusal Veneer) Case Bonding Protocol

TAKE A BREAK
SIT BACK
RELAX

DENTAL DIARIES

WHAT IS DENTAL DIARIES?

Take a break , Sit Back, Relax

This is what Dental Diaries wants to achieve for Hong Kong / Macau dentists.

Every quarter, our editorial team will gather the most up-to-date news in the dental field, short articles, case studies, lifestyle information and also a classified ads space for the local dental community.

We hope that every time you receive the latest Dental Diaries, it would make your break a little bit more relaxing!

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Congratulations to Peak Dental Solutions in creating a new dental journal (Dental Diaries). I wish this milestone journal provides updated information not only to dentists in Hong Kong but can be extended to dental related personnel in Great Bay Area, China and the world.

Prof. Cheung Lim Kwong

Honorary Clinical Professor of Dental Faculty, HKU
President of Hong Kong Association of Oral and Facial Rehabilitation

Always encouraged to see endeavours to elevate the profession with local and industrial insights. Congratulations! Looking forward to reading and contributing to Dental Diaries!

Dr. John Ling

Honorary Clinical Professor in Orthodontics

Dentistry can be stressful. It is indeed refreshing to get in touch with the latest developments in Dentistry in a regional setting. I commend your efforts in bringing the world to our doorsteps and am excited to receiving each edition of the Dental Diaries.

Dr. Daniel Tang

Specialist in Prosthodontics

I am delighted to witness the publication of the first issue of Dental Diaries. I am sure all of us will benefit from the experience sharing and professional exchanges amongst dental professionals.

Dr. Eugene Chan SBS BBS JP

Past President of Dental Association

祝賀「Dental Diaries」耀香江、領全球!

林志傑醫生 BBS MH SBSJ 太平紳士
香港華人牙醫公會主席

It's my pleasure to witness the successful launch of the Dental Diaries. Looking forward it to be one of the most welcome platforms for intellectual exchange as well as leisure experience sharing among our dental professions.

Dr. Ho King Lun, Dominic

Deputy Director, Clinical Research Centre

Clinical Assistant Professor

Congratulations to Dental Diaries Magazine! Appreciate your effort to publish a dental magazine belongs to our home place. Wish you very best in future contributions to the Hong Kong Dentistry

Dr. Jerry Lau

FCDSHK (Community Dentistry)

I take great pleasure in congratulating the launch of "Dental Diaries". The publication aims to provide the readers the up-to-date clinical and research materials in relation to dental professionals. It's a proud moment for editorial team. I wish them success in their future endeavors.

Dr. Frederick C. S. Chu

Editor in Chief of the journal 'Current Dentistry' of Bentham Science Publisher, UAE

Congratulations for the new dental magazine for the local region !
It is comprehensive which provides us new technology in dentistry field & also some up-to-date news in HK & Macau region!

Dr. Annie Wan

Specialist in Prosthodontics

Congratulations on getting your magazine published. It is particularly impressive that the magazine can devote to the education, product advancement, case studies and leisure corner among our profession. May your magazine reach great heights in the years to come.

Dr. Chan Fuk Shing

General Practitioner

UPCOMING COURSES



For more information, please visit www.cde.hk or contact +852 9151 1009.



When to Choose BPS And SEMCD Techniques?

Cover new ideas about lower removable denture stability. Dr. Shen will explain a few key features of these systems and share some clinical cases for better visions and know-how to choose and apply these techniques on chair-side.

Hosting Organization: CDE

Webinar

Dr. Johnathan E.M. Shen.
DDS



DATE
14th DEC 2021



TIME
7:00PM – 8:00PM

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Hosting Organization: CDE

Lecture & hands on

Dr. Chan Fuk Shing, Brian



DATE
18th & 19th DEC 2021



TIME
9:00AM – 5:30PM

FEE: HKD10,000



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

Learn the up-to-date knowledge and techniques to maximize your production as well as success in crown and bridgework. Dr. Liu will review several important aspects of the clinical procedures of crown and bridgework and make them practical to your practice.

Hosting Organization: CDE

Lecture & Hands on

Dr. Liu Kwong Shing, Jerry
BDS (HK), MDS (HK), MFGDP (UK)



DATE

7th & 14th JAN 2022



TIME

9:30AM - 6:30PM

FEE: HKD10,500

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Achieve successful outcome of removable prosthodontic rehabilitation. Dr. Wan will help you understand more about the innovative technique in obtaining optimum retention in lower edentulous ridge.

Hosting Organization: CDE

Lecture & Hands on

Dr. Wan Kong Yuk, Annie



DATE

21st, 28th JAN 2022



TIME

9:30AM - 6:00PM

FEE: HKD8,500

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Dr. Hoi-Shing Luk

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- Dr. Yi-Ju Lin
- 謝宗龍醫生
- Dr. Chi-Min Shiu
- Dr. Marianne Ong
- Dr. Keith Leung

FEE: HKD190,000 (15 COURSES)

Dr. H C Steve Law

PERI-IMPLANTITIS: WHAT HAVE WE LEARNED?

Prof. Nikos Mattheos

Last month Prof. Nikos Mattheos hosted a panel discussion on Peri-implantitis with 3 world class experts during the ITI World Symposium 2020ONE. Drs Lisa Heitz Mayfield, Mario Rocuzzo and Daniel Thoma came together to discuss the case of Claire, a patient recently diagnosed with Peri-implantitis. In a discussion naturally evolving about an actual patient, the host and guest speakers reviewed the latest developments in all aspects of Peri-implantitis, debated and responded to questions from the host and the audience. Did you miss it? Well, don't worry, we were there for you and we saved the most important "take-home" messages!



Lisa Heitz Mayfield is a world class expert in Peri-implantitis from Australia, currently in private practice and affiliated with Universities in Western Australia and Sydney. She started the discussion with a presentation focused on the patients' experience with Peri-implantitis and reviewed the current state of evidence in assessing risks for the disease.

Although studies reported that only around 10% of patients diagnosed with peri-implantitis will present with symptoms, the diagnosis has significant implications for them. Abrahamsen and his associates in Gothenburg conducted open-ended interviews with patients who were referred to the periodontist for treatment of peri implantitis and documented the surprise, concern and feelings of disappointment or frustration they often experienced. Such patients were suddenly confronted with major decisions their trust to the dentist was shaken and were worried about the financial costs and the prognosis of the treatment. She placed therefore the emphasis on two important factors before implant placement: patient-centered communication and patient-centered risk assessment.

She went on to identify 3 major risks for peri-implantitis, based on the current evidence:

- History of severe periodontitis
- Lack of compliance with maintenance care
- Deficient plaque control



Surprisingly maybe, the evidence against smoking and diabetes is less robust, although both have been traditionally considered as major risks. The good news is then that 2 of the major risks are controllable with proper interventions. Proper design to ensure cleanability of the prosthesis and professional maintenance care delivered at least twice a year together with patient administered oral hygiene could minimize the risks for peri-implantitis. Finally, she presented a recently published instrument (IDRA) (1) for the assessment of the patients' peri-implantitis risk based on 8 parameters: a) prosthesis design, b) supportive care frequency, c) bleeding on probing, d) number of deep pockets, e) susceptibility and f) bone loss in relation to age.

Mario Rocuzzo, adjunct professor in the University of Turin, focused his presentation in the surgical treatment of Peri-implantitis. He started by emphasizing the importance of the optimal implant position, as the treatment of Peri-implantitis is much more predictable if the implant is placed and restored appropriately. Malpositioned implants with compromised or uncleanable restorations might pose a serious challenge for the treatment of peri-implantitis. The



Prof. Mario Rocuzzo

treatment of peri-implantitis with reconstructive surgery today is predictable and can be successful, provided it is applied on highly motivated patients with a low plaque and bleeding scores. He identified the surface and the shape / design of the implant as important parameters of success, but maybe surprisingly he reported that in his results the morphology of the peri-implantitis defect was less important than the patient related factors. His approach of choice is reconstructive surgery, which involves decontamination of the implant surface, augmentation of the intrabony components of the defects with the use of xenograft without the use of barrier membrane and finally the placement of a soft-tissue graft as a "cuff" around the implant neck at the closure of the surgical wound. In their recently published study following 75 implants after 5 years, the implant survival rate was 80%, but interestingly there was a huge difference between people who completely adhered to the SPT compared to people who did not.

Daniel Thoma is Professor in the department of Prosthodontics in the University of Zurich. His part was to point out the interactions between the prosthetic design and material with the health of the peri-implant tissue and development of peri-implantitis. His first realization was that although the latest consensus workshops have gone to great length in defining peri-implantitis and the related risks, very little



Prof. Dr. Daniel Thoma

information is available with regards to the role of the reconstruction, it's design and material. When it comes to material some recent reviews comparing metal ceramic restorations with Zirconia in single crowns have identified biological complications of 8-9% for both, pointing towards any difference. With regards to type of retention, when summing up results from in-vitro and clinical studies for single, multiple, and full arch restorations, he concluded that screw retained restorations presented with less risk for peri-implantitis. At the same time, the design of cement retained restorations is crucial, as the emergence profile and the depth of the cementation shoulder under the soft tissues could predispose to cement rests and inflammation if not properly planned. He went on to indicate the contour of the prosthesis as a major parameter of risk, with some recent studies showing a contour wider than 30 to be associated with increased risk for peri-implantitis. In some of his unpublished data the contour wider than 40 was associated with peri-implantitis. Finally, he concluded that the evidence is slowly accumulating to support prosthesis modification as an important part of the treatment of peri-implant tissue inflammation, when there is obvious over contouring of the prosthesis, or other designs that limit the accessibility to oral hygiene.

SOME PANEL QUESTIONS TO TAKE HOME

1 QUESTION

What is the longevity of implant therapy?
Are implants for life?

All panelists agreed here that dental implants are not meant to last for life, despite being the most successful implantable materials. Studies have shown that approximately 90% of the patients maintain their implants at 10 years' time point, but there is a very wide individual variation that makes it very difficult to give a reliable estimation for each patient. The panel suggested colleagues to conduct a thorough risk assessment of each patient and communicate the limitations to the patient, while emphasizing on the importance of attending a regular maintenance scheme. Mario Rocuzzo mentioned that he offers a free replacement if an implant is to be lost within 10 years, but only to patients who adhere to the recommended maintenance scheme, an idea however that was not adopted by the prosthodontist of the panel, Prof. Thoma. All authors stressed that it is important not to convey the message to patients that "implants last for life", something that is not the case with any other medical device. Maybe not surprisingly however, the attitude that "implants last for life" was still very widespread among colleagues, as the audience poll showed...

2 QUESTION

What can we expect from the surgical treatment of Peri-implantitis? What to do if our surgery fails to arrest disease progression?

Mario Rocuzzo the basis of their study (reconstructive surgery) (2) mentioned that he would expect around 2/3 of the patients to maintain success after 5 years, with success defined as the absence of deep pockets around the implants and absence of additional bone loss. At the same time around 17% of patients may lose an implant in the same period. Lisa Heitz Mayfield added that if one year after surgery after we maintain pretty shallow probing depths and a fairly good stability of the bone levels, we can anticipate a pretty good chance to still maintain success after 3 or 4 years. Recurrence of the disease can occur however at any stage. If deep pockets and marginal bone loss persist or reappear at some point in time, she will be not inclined to repeat the surgery, but rather consider explantation of the implant. Actually, removal of the implant is something that we should consider discussing with the patient, as one option or potential outcome to be aware of in any case of peri-implantitis.

3 QUESTION

What to do with implants which are placed in sub-optimal position?

Implants referred to the prosthodontist might be at times placed in more or less compromised position. Daniel Thoma acknowledged that this can be at times the case in particular in full arch restorations, therefore he always aims to discuss the treatment plan with the surgeon beforehand. In cases however where he ends up with a referral of malpositioned implants, he will discuss the risks first with the referring colleagues as well as the patients. There were cases where he ended up choosing other restorative options than implant born restorations in such situations.

4 QUESTION

What about prosthesis modification in patients with Peri-implantitis?

It is a need that is occurring often, especially in large and full arch reconstructions. When the prosthesis predisposes to plaque accumulation and peri-implantitis would discuss with the referring dentist and explain the need for modification. As however many patients are no longer followed by the dentist who placed the restoration or do not wish to return for further care, he often has to undertake such modifications himself or in collaboration with his lab, after a thorough explanation to the patient. In some cases prostheses cannot be easily modified and at times he had to remake them or resort to replace fixed with removable prostheses.

5 QUESTION

How do you decide between surgical treatment or explantation?

Here we have to use multiple levels. First of course the patient behavioral and systemic risk level. Obviously, no surgery will be meaningful for a patient who is unable or unwilling to apply the proper oral hygiene. Then come several local parameters that can direct us to one or the other option. It is very important if the implant is properly positioned or in a compromised place. If there is an aesthetic involvement or not. Furthermore, added Mario Rocuzzo, the surface and geometry of the implant, the familiarity of the operator to the implant and how easy it is to decontaminate it. The prosthesis type and accessibility to the defect, the amount of bone and tissue remaining, the presence and condition of neighboring teeth, the overall rehabilitation plan and the strategic aspects of possible alternative solutions or not, all these might be important determinants in a case-by-case assessment.

6 QUESTION

Do systemic antibiotics help in the surgical treatment of peri-implantitis?

Maybe surprisingly to many, Lisa Heitz Mayfield acknowledged that the evidence in support of the use of systemic antibiotics as a supplement to peri-implantitis surgery is very weak. In very few randomized controlled trials a small benefit is shown in favor of systemic antibiotics which is limited in the first year. In the light of recent evidence about the potential harmful role of antibiotics, it is today debatable whether systemic antibiotics should be used with peri-implantitis treatment. On the other hand, she admitted that her studies with surgical treatment of peri-implantitis were conducted in conjunction with systemic antibiotics, mainly amoxicillin and metronidazole.

References

1. Reconstructive treatment of peri-implantitis infrabony defects of various configurations: 5-year survival and success Mario Rocuzzo et al Clin Oral Implants Res 2021 Oct;32(10):1209-1217.
2. Implant Disease Risk Assessment IDRA—a tool for preventing peri-implant disease Lisa J. A. Heitz-Mayfield et al Clin Oral Impl Res Volume31, Issue4 April 2020

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PHOTOGRAPHY AS A HOBBY

By Dr. Gerald Siu

Fellow practitioners will agree, I am sure, that dentistry is demanding, both physically and mentally. We need to run a professional practice (which is also a business) and coordinate with several levels of personnel. It is stressful and time consuming.

Dentists, like everyone else, need relaxation, distraction and entertainment in their lives.

Photography as a hobby has many benefits. It is fascinating, absorbing and amusing, relieves stress, brings relaxation and contact with new people, areas of interest and fields of study. It can be very creative, require imagination and help us find beauty in the world. Even looking at photographs seems to induce the same reaction in people as actually seeing beautiful views in the real world. Photography promotes a positive manner, emotional expression and physical exercise, leading to an increase in health and well being.



Contrasts of colour, light, shade and form.



More than meets the eye? Another colourful and detailed photo. But unlike us, bees and other creatures have ultraviolet vision, which means they can see nectar containing patterns in the flower's petals.

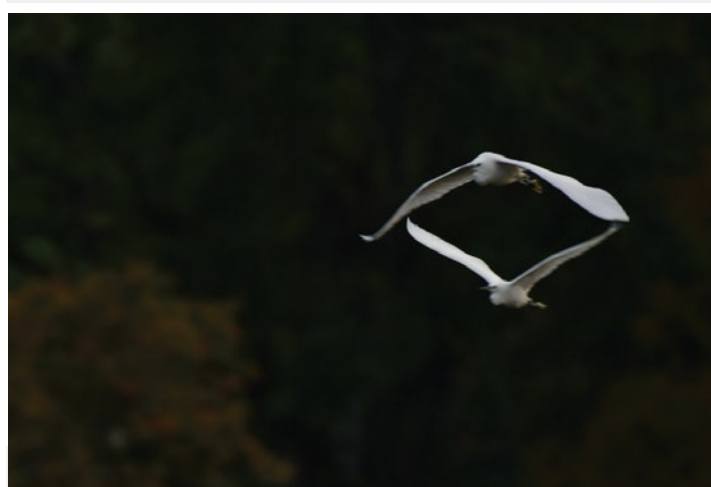


Bright colours and sharp focus reveal a wealth of detail, from patterns on the beetle's back to leaf structure.

The range and scope of photography is huge, depending on preferred themes and subjects of interest. Photographers have different characteristics, hence their productions will reflect their styles and personalities. Photographic skills can promote learning and sharing (particularly of memories).

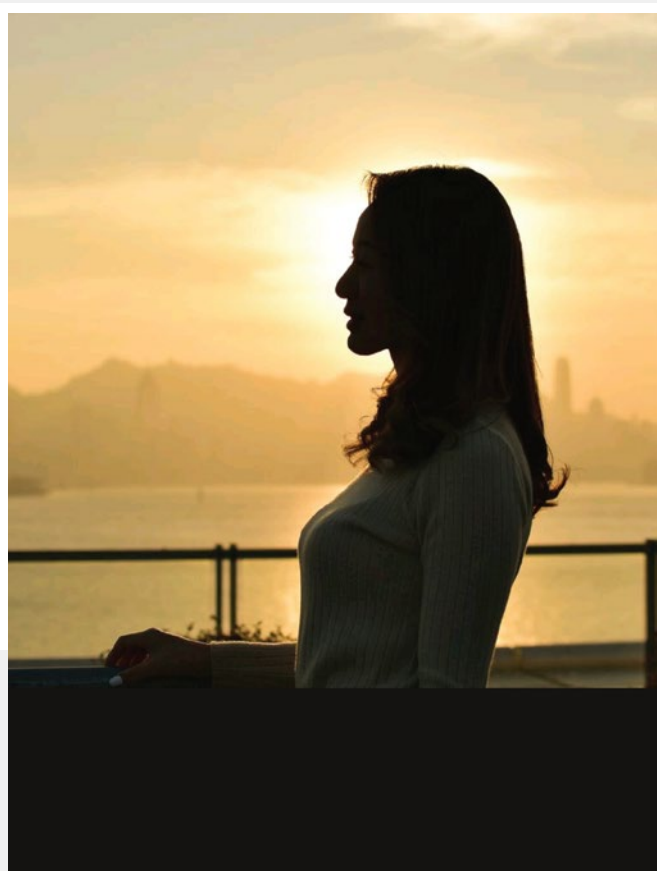


The menacing sky, neon lit HK skyline, its geometric reflection in the harbour and ferry pier detail in the foreground create an elemental composition (air, earth, water).



The dramatic contrast of black and white conveys a pleasing sense of symmetry.

The setting sun and shadow combine to produce a stunning silhouette with halo effect.



Finally, the photographer, of whatever level, needs a variety of equipment, which can itself be a subject of interest for the technically minded.

Dental Industry News



New Platform

Ivoclar Vivadent, and the Straumann Group, have teamed up with 3Shape to launch 3Shape Unite globally in December 2021. 3Shape Unite is a new platform that aim to bring world-leading dental companies, solutions, and labs together, enabling dentists to manage all their cases with choice and ease.

Huge Investment

DentalMonitoring announced a US\$150 million growth financing. The round is led by a new investment from Mérieux Equity Partners and Vitruvian Partners, demonstrating confidence in the company's plans. DentalMonitoring will use part of the proceeds to increase presence in the United States and expand into new markets.

Recent Study

Research team at the Faculty of Dentistry of the University of Hong Kong revealed that jaw asymmetry is likely to be a causative factor of jaw joint pain, and that surgical correction of facial asymmetry is effective in improving or even curing patients suffering from jaw joint pain. In the study, the team investigated the prevalence of TMDs in 134 patients. The study shows that patients with dentofacial deformity, in particular facial asymmetry, are much more likely to suffer from TMD than individuals without such deformity.



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Pain Experience after Dental Implant Placement Compared to Tooth Extraction

By Alaa W. AlQutub

1. Introduction

Fear of dental treatment has been ranked as the 4th most common fear among the population [1]. The most feared dental procedures in dentistry ranked by the patients are drilling, anesthetic injection, and extraction. Dental fear mostly starts in childhood in patients with previous traumatic dental experiences as the main causative factor. In this case, the dentist's professional behavior plays a major role in creating such a fear. However, for acquired fear in adult years, the main reason is pain. Patients' fear and pain anticipation towards treatment may not consistently reflect their actual experience of treatment as they may expect a stimulus to be more painful than what they actually perceived [2].

To manage and control patients' fear and anxiety before a planned dental surgical procedure, a thorough discussion should be attempted. Providing information to patients can help dentally anxious individuals prepare for treatment and subsequently reduce anxiety levels [3].

As dental implants acquired much popularity as a first treatment option chosen by the patients, limited information is available on the pain experience associated with the surgical placement of dental implants [4]. Comparing this experience to other dental surgical experiences such as dental extraction is more relevant to the patients as it can help them to understand the anticipated pain after implant surgery, hence influencing their decision-making process. Moreover, they should understand that there are some contributing factors that might increase the pain perception after implant placement surgery.

2. Effect of Anxiety Level on Pain Experience

Patients tend to overestimate the fear of pain of the dental treatment that they have not experienced, compared to those they have experienced in the past [5]. Most of the candidates for surgical implant placement do not have an experience with implant surgery, and subsequently, they become more anxious about the associated pain which can affect their certainty about the treatment [4].

On the other hand, the majority of these candidates may have an experience of at least one tooth extraction. Comparing the two surgical experiences will help the patients to relate the anticipated pain after implant surgery which can influence their decision-making on proceeding with the treatment providing clear and accurate information about expected pain during treatment which will result in more reliable communication between clinicians and patients. This will enable patients to have a more realistic expectation of the treatment process and reveal all risks that might influence or conflict with their decisions [6].

Well-informed patients about their procedures seem to be less anxious and more comfortable [7].

A qualitative study of patients' views of techniques to reduce dental anxiety was conducted by Wang et al. [3]. Four factors were acknowledged as possible ways to reduce patients' anxiety levels including preparedness, teamwork, reinforced trust, and tailored treatment plan. In this study, patients preferred to be prepared for the treatment by having more information about the steps of the procedure. They also indicated that engaging them in the process of treatment plan formulation and decision-making will reduce their anxiety and build up the trust with their dentists. Importantly, participants wanted to know about the anticipated discomfort during and after treatment, the cost, expected treatment time, and number of appointments needed to complete the treatment [3]. This study supports the concept that well-informed patients will be less anxious about the dental treatment.

Dental anxiety has been reported as having direct influence on pain perception in dental procedures in different laboratory and clinical studies. It is closely linked to painful stimulus and increased pain perception. Therefore anxious patients may experience more pain that lasts longer with exaggerated memory of pain [8].

There is a positive relation between the patient's fear and anxiety level and pain perception after dental procedures. Croog et al. [9] assessed relationships between presurgery psychological characteristics and postsurgery pain response and effect on life activities following each of two sessions of periodontal surgery. Forty-two female periodontal patients with no previous surgical experience were evaluated. They indicated that presurgical scores on dental anxiety, fatigue, and depression were positively associated with measures of postsurgical pain after the first surgery. However, a weaker pattern of associations was evident after the second surgery. The study points to the relevance of presurgical psychological condition as a predictor of postsurgical pain and impairment of life activities. It is indicated that postsurgical pain and discomfort can possibly be reduced by attempts to control dental anxiety and emotional distress prior to surgery. It also supports the perception that patients' anxiety level is reduced with the past dental experience [9].

3. Pain Experience after Implant Surgery Compared to Tooth Extraction

There are limited data comparing the pain experience of dental extraction with dental implant surgery on the same patient. This can be advantageous as the pain experience reported by the same subject will be more consistent and the comparison will be more reliable.

One study that compared the pain experience in patients who went through both tooth removal and dental implant surgery was carried out by Tabrizi et al. [10]. They conducted a crossover study on 40 patients and their pain severity at 12, 24, 48, and 72 hours after each procedure was assessed by using a visual analog scale (VAS) as self-reported. Their results showed that the pain of dental implant surgery decreased faster than tooth extraction with time, and that the postsurgical pain with implant surgery is mild with moderate inflammation. They concluded that patients who had experienced both tooth extraction and a dental implant placement reported significantly less pain in implant surgery [10].

This finding is in line with a conclusion of a study conducted by Abolfazil et al. [11]. The study was cross-sectional, and the patients underwent simple tooth extraction for posterior teeth under local anesthesia and received ibuprofen (400mg) every 6 hours for postsurgical pain management. Two months later, dental implant surgeries were carried out for all patients, and they received ibuprofen (400 mg) every 6 hours as well. Pain level was assessed by VAS immediately after procedure and in the interval time of 6 hours and 1, 3, and 7 days, respectively. They stated that the level of postsurgical pain after tooth extraction was more than implant surgery [11].

Pain and inflammation following the placement of dental implants were assessed by Gonza lez-Santana et al. [12]. They studied pain and swelling in the first-week postimplant surgical placement reported by the patients using verbal and visual analog scale (VAS). Most of the patients reported slight pain with a peak intensity 6 hours after surgery and moderate swelling with a peak intensity of inflammation after 48 hours. Analysis of pain 6 hours postoperation showed a statistically significant correlation to the number of implants, as increased pain was recorded in the patients subjected to a large number of dental implants. They concluded that pain after implant placement is mild with moderate inflammation [12].

Al-Khabbaz et al. [4] assessed the pain associated with surgical implant placement in a multicenter, prospective study. Patients' mean pain scores were evaluated with 0 to 10 scale during 24 hours and 1, 6, and 12 weeks after surgery. They reported that pain experience following the implants' surgical placement was generally mild and gradually decreased with time [4].

Pain experience and anxiety following dental implant placement was investigated by Hashem et al. [13] using questionnaires by recording pain intensity interference with daily activities on a visual analog scale (VAS). They also analyzed pain and anxiety by collecting salivary cortisol 1 week before surgery, the day of surgery, and 3 and 6 days postoperatively. Their results stated that most patients reported mild to moderate pain and interference with daily activities after implant placement. Average pain experience decreased significantly with time, and limitation of daily activities was highest on the first postsurgical day and diminished to about half the maximum level by the 2nd or 3rd day. Patients scored the highest anxiety level on the day of surgery; however, the salivary cortisol level did not validate International Journal of Dentistry

this as no difference was presented. It is concluded that implant placement is a mild to moderately painful and anxiety-provoking procedure with some limitations of daily activities and symptoms are expected to occur during the first 3 postsurgical days [13].

A comparison study conducted by Yao et al. [6] revealed that surgical tooth extraction is significantly associated with more pain and bleeding at the first day of healing. However, more swelling and bruising were associated with implant placement with guided bone regeneration procedure. It is reported that healing events of straightforward implants are similar to those of simple extraction [6].

The patients' perspective, i.e., how patients perceive their oral health, is being recognized recently as a significant outcome in modern implant dentistry. A study was conducted to assess how patients perceive the perisurgical stages of implant placement and whether the overall perceived burden of the surgical process is related to specific stage of treatment and to compare patients' perceptions during implant placement with tooth extraction. Considering treatment stages, burdens were highest for anesthesia and lowest for side effects. The study results demonstrated that even though implant placement requires basically similar surgical procedure and instruments for incision, muco- periosteal flap reflection, bone drilling, and suturing, patients seem to perceive the procedures related to bone and soft tissue less burdensome than during surgical tooth extraction. It can be concluded that implant placement was rated as least burdensome, especially in relation to bone and soft tissue manipulations such as pressure during incision or vibration due to drills compared with surgical tooth extraction [14].

4. Factors Affecting Pain Experience in Implant Patients

Many factors are associated with the reported pain intensity in relation to the implant placement procedure such as operator experience, female gender, and surgical difficulty as reported by Al-Khabbaz et al. [4].

The surgeon's experience plays a role in reducing the perisurgical and postsurgical pain [15]. Morin et al. stated that senior surgeons produced significantly less pain than juniors during the implant placement procedure. They also found that pain after implant placement perceived differently based on the patients' gender, with females reporting greater overall pain intensity than males. However, men are more disturbed by the low levels of pain during healing than women [16].

A number of implants placed and the related regenerative procedures (e.g., guided bone regeneration, sinus lift, and split ridge) are associated with increased postsurgical pain and swelling. Moreover, pain experience is more intense in older patients and smokers [12, 13].

It is proven that the longer the duration of the procedure, the more swelling, pain and discomfort perceived by patients [14].

Location of the placed implant and the proximity to vital structures is correlated with pain perception. Swelling is greater in patients with implants placed in the posterior versus anterior zone and in free end spaced or totally edentulous patients versus interdental spaces.

Gonza lez-Santana et al. [12], who studied the pain and swelling in the first-week postimplant surgical placement reported by the patients using VAS, analyzed the relation between inflammation 48 hours after the operation and the different study variables. Statistically significant correlations were found: more advanced patient age, surgery in eden- tulous patients and free extremes, and surgical approaches in the posterior area of maxilla and mandibula.

Moreover, a significant association was observed be- tween swelling and more number of implants placed and with surgery involving sinus lift or bone regeneration procedures [12]. The results of Yao et al. [6] also reported that patients who had implant placement with guided bone regeneration procedure may experience more swelling and bruising [6].

Location of the placed implant and the proximity to vital structures is correlated with pain perception. Swelling was reported to be greater in patients with implants placed in the posterior versus anterior zone and in free end spaced or totally edentulous patients versus interdental spaces [12].

Timing of implant placement and loading are also related to the pain experience. Immediate implants may be asso- ciated with more discomfort as patients' undergo an ex- tensive surgical procedure of both tooth extraction and implant placement. Urban and Wenzel reported that pa- tients experienced low to moderate pain with severe swelling after immediate implant placement in the molar area with the regenerative procedure [17]. Immediate loading may induce more postoperative pain and swelling than con- ventional or delayed loading [18].

In terms of flap design, flapless procedure has less pain intensity and duration and faster healing time than open flap procedures. There is a relatively high probability (43%) of experiencing no pain with no medications, and this prob- ability could be increased by taking steroidal anti-inflam- matory agents [19]. Khouly et al. reported that short-term use of analgesic medications, in the first 72 hours, is suffi- cient for postsurgical pain management in dental implant surgery [20]. On the other hand, it is recommended that analgesics should be prescribed during the first week after tooth extraction indicating that tooth extraction has a prolonged unpleasant healing process that necessitates using analgesics up to the 7th postextraction day. [21].

Minimally invasive procedures are always preferred to reduce patients' anxiety and the pain experience and hence increase the treatment acceptance rate by the patient.

5. Discussion

It is suggested that pain intensity is higher with tooth ex- traction compared to the implant placement procedure. This can be explained as most of the extracted teeth are usually chronically inflamed or symptomatic. There is a significant relation between pre-extraction tooth status and the pain intensity perceived after extraction, as postextraction pain can increase 3 folds in patients with symptomatic teeth [22, 23]. The reason for such pain is most probably due to the synergistic effect of different inflammatory mediators, produced by the pre-existing inflammatory condition that produces a long-lasting increase in the nociceptors activity [24]. Therefore, inflamed teeth with triggered nociceptors and carious teeth with excited nerve endings will produce more pain when extracted as compared with noninflamed teeth [21]. Subsequently, it is expected that implant place- ment procedure that does not involve dealing with inflamed teeth is more pleasant and has less postsurgical pain perception.

Another explanation is that dental implant surgery is a more controllable and less traumatic procedure than tooth extraction. Subsequently, less pain and discomfort is ex- pected postsurgically.

More research studies should be carried out to compare between surgical implant placement and other oral surgical procedures on the same individuals with larger sample sizes, taking into consideration the contributing factors that might affect the pain perception by implant candidates.

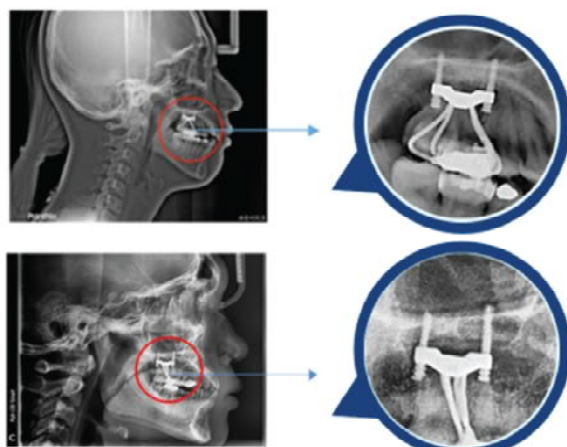
6. Conclusion

Informing patients about the anticipated surgical procedure of implant placement and the postsurgical pain intensity can reduce their anxiety level and subsequent postsurgical pain and discomfort. Patients can be informed that, in general, implant placement surgical experience is less unpleasant compared to tooth extraction with less postsurgical pain and limitation of daily activities. However, some factors can increase the pain intensity and discomfort level on indi- vidual bases.

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CLINICAL CASE



• Young Adult Case

• Child Case



Age: 16 yrs



Age: 11 yrs

• Senior Case

• Adult Case



Age: 54 yrs



Age: 22 yrs



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BIOMATERIALS KOREA

BLX for Immediate Placement in Posterior Mandibular Area with Sealing Socket Abutment

By Dr. Tommy Fung

Key Points

Immediate implant placement is one of the hot topics in implant dentistry. The benefit of immediacy is to improve patient's overall treatment perception and quality, in terms of the reduced number of visits and healing/handicapped period, without jeopardizing long term stability (Bhola, Neely, & Kolhatkar, 2008).

Careful examination of three dimensional imaging before extraction effectively guides clinicians to proper case selection and treatment planning (Smith & Tarnow, 2013).

An implant with tapered core and enhanced thread, can offer a secure grip into the socket wall after tooth extraction. Optimum primary stability is achieved in this challenging situation. The use of an implant with chemically modified surface further speeds up the process of new bone apposition without compromising the quality of osteointegration (Buser et al., 2004).



Initial Situation Description

- A 41-year-old female requested a consultation. Tooth 36 was found with a distal caries with subgingival extension. The restorability was guarded.
- Treatment proposed including root canal treatment, crown lengthening and full contour crown placement for 36, was discussed with the patient.
- Primary examination including CBCT was taken to examine the local situation.
- Patient elected for extraction and replacement with implant after consideration of her time and need.
- Immediate implant placement was planned to allow better adaptation to the patient's tight business schedule.
- Hygienic phase was completed with scaling and oral hygiene instruction.

Surgical Procedure

- Atraumatic extraction with sectioning and careful elevation of tooth roots were accompanied with the maintenance of intact socket wall.
- Implant (Straumann SLActive, BLX 5.5 x 12mm) was placed at correct 3D position at the interradiacal septum.
- Initial primary stability of > 35Ncm was achieved.
- The space between the implant and socket was filled with particulate xenograft.
- A temporary abutment was modified with flowable composite, contoured according to the socket size and shape.
- The socket sealing abutment was further polished before tightening onto the implant (>15Ncm), covering the grafted area.
- Later, working impression with open tray technique was taken with a customized impression coping.
- Full milled zirconia crown with an exact copy of the emergence profile was connected and tightened to 35Ncm. Access screw hole was sealed with teflon tape and resin composite.



It is vital to take into account the morphology of the socket in a three dimensional manner. Pre-operative assessment with cone beam CT gives a good estimate of the amount of bone left after extraction. The slope and curvature of the tooth roots, the dimension and radiodensity of the interradicular bone, and the presence or absence of pathological bone resorption around the area, provide hints whether the implant would be placed as planned, or drifted aside. Sometimes a partial removal of the interradicular bone provides a stable base for site preparation (Fugazzotto, 2002). Bur slipping could be avoided by pre-drilling at this ideal position with a needle bur or a sharp round bur. Xenograft was placed in the fixture-socket gap as a bone substitute material. It was shown to result in less horizontal buccal bone resorption than immediate placement of implant without bone grafting (Zaki, Yusuf, El-Khadem, Scholten, & Jenniskens, 2021).

Sealing socket abutment is a suitable tool for wound coverage after posterior immediate implant placement. Like the case of immediate restoration at the anterior area, it provides and maintains support to the soft tissue in the transmucosal zone. The intended low profile outline effectively avoids the potentially detrimental immediate-loading effect (Finelle, Popelut, Knafo, & Martin, 2021). This technique is also designed to provide a streamlined clinical workflow such that the anatomical morphology of a molar is maintained and the biocopy transferred throughout the surgical and restorative phase of the treatment (Finelle, Sanz-Martin, Knafo, Figue, & Popelut, 2019). The final emergence profile of the implant prosthesis resembles the original natural molar.

Conclusion

Immediate implant is a double-edged sword. The actual anatomy of the freshly extracted socket, and the corresponding surgical technique utilized, dictate the overall treatment outcome. Straumann BLX implant with its self-cutting thread and fully tapered design, improves implant stability in this especially unfavorable condition. It certainly provides added value to the handling of cases of immediacy. After all, careful and accurate execution of the surgery cannot be overemphasized. It is crucial to weigh the immediate short-term benefit over the long-term clinical result.

Discussion

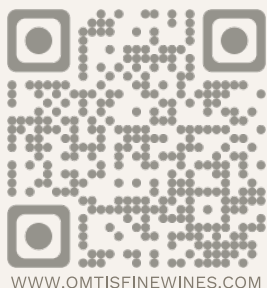
Immediate implant placement with conventional loading protocol is clinically documented in the posterior mandible and scientifically and clinically validated in the posterior maxilla (Zhou, Gallucci, Chen, Buser, & Hamilton, 2021). The survival rate was shown to be no different compare with delayed implant placement control (Ketabi, Deporter, & Atenafu, 2016). Within this context, the operator is confronted by two challenges. Firstly, the placement of an implant at the correct three dimensional position with adequate primary stability, regardless of the morphology of the sockets; and secondly, the proper transmucosal closure of the wound to cover and protect the grafted area.



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The Overlay CASE (Occlusal Veneer)

Case Bonding Protocol

By Jorge Luna

A conservative minimally invasive approach to preserve tooth structure.

BISCO products used: All-Bond Universal, Duo-Link Universal, Select HV Etch, ZirClean cleaning gel

Case description: With this case, I took a conservative approach to preserving tooth structure using an overlay bonding restoration. A 42-year-old female patient came to my office after receiving root canal treatment. Once the tooth was treated, cuspids were preserved to avoid possible fracture of the remaining structure. Cusps were prepped by reduction of 1 mm at the occlusal surface, a VPS impression was taken, and the dental laboratory milled a lithium disilicate overlay (occlusal veneer).

Once we tried in the restoration, ZirClean cleaning gel was applied and then rinsed with water/air. AQUACUT QUATTRO was used on the ceramic surface. Etching was completed with Porcelain Etchant 4% Buffered Hydrofluoric Acid Gel and rinsed with air/water. The double etch technique was used with Select HV Etch 35% phosphoric acid etchant with benzalkonium chloride, then rinsed with air/water. Steam cleaner was applied around the surface to eliminate acid excess and then dried with clean air. Silanization was completed with Porcelain Primer pre-hydrolyzed silane primer. A heat dryer was used to keep it safe and avoid light and dust.

A rubber dam was placed, and the enamel surface was etched with phosphoric acid, rinsed with air/water, and the surface was gently dried. Two consecutive coats of All-Bond Universal were applied and rubbed. The solvent was then evaporated with air and light curing was performed.

For the bonding stage, eCEMENT dual cured resin cement was applied on the intaglio of the restoration. The restoration was delivered over the tooth surface, with gentle pressure applied, tack cured, then cleaned and flossed. Each tooth was light-cured. Glycerine gel was applied and light-cured. The rubber dam was removed and the restoration polished.

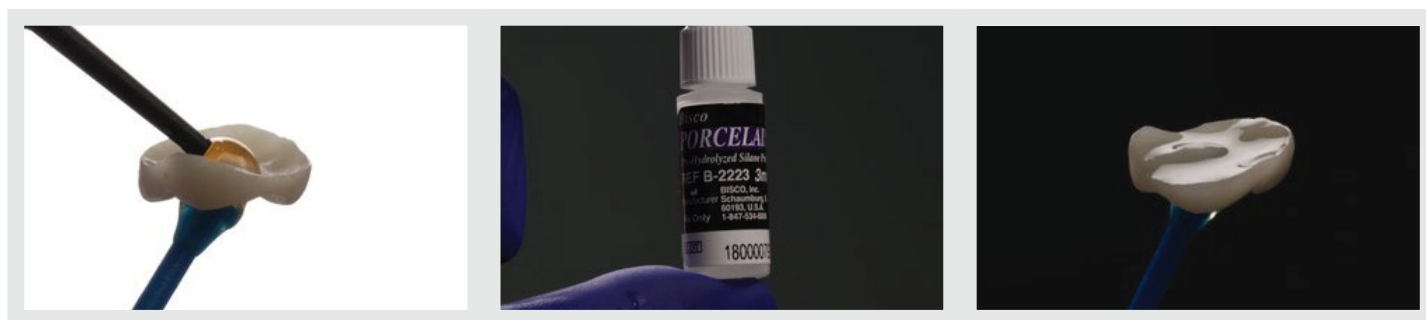
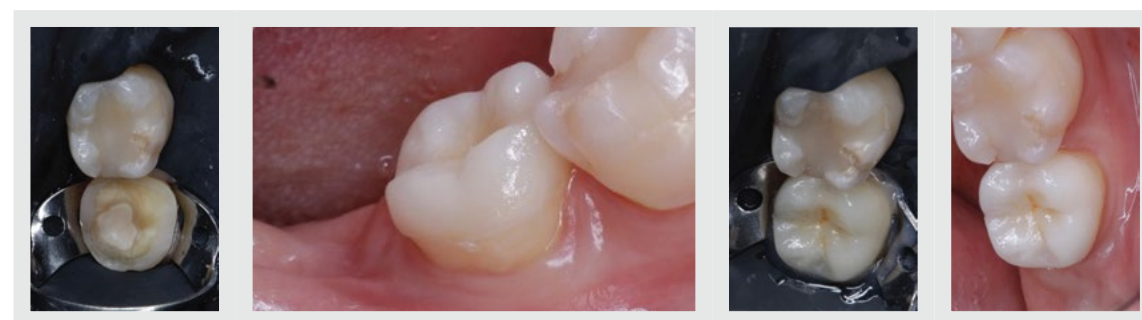


Figure 1: After try-in, the restoration is etched with HF acid.

Figures 2A-B: Porcelain Primer is applied to the intaglio of the restoration.



Figures 3A-B: Select HV Etch and All-Bond Universal are used in the selective etch technique to bond to the restoration.

Figure 4: Restoration is delivered and cemented with Duo-Link Universal.

Figure 5: The cemented restoration post-op.

Data Reveals What a Patient Can't Feel

By Dr. Chris Stevens

Patient Overview

A 54-year-old patient had an edentulous space at the #19 area where the first molar was extracted as an emergency about six months previously. He came to the office with a desire for replacement.

- Had a bridge on the lower right side and did not like how food became impacted every time he ate. Thus, he searched implants and found our website.
- There was no convincing him implant replacement was a good option.
- Primary concern was the patient's smoking habit. Smoking does not eliminate the implant option, but I always tell smokers they need to be aware that nicotine and bi-products of cigarettes have an adverse effect on the healing process. But, the patient chose the implant option. The implant prosthesis replaced tooth #19, between two natural teeth.

We used a 4.7 diameter, 10 mm length Legacy 3 (Implant Direct International, LLC) implant. After healing and crown cementation, we used T-Scan to capture the patient's bite force dynamics, so he could check the occlusal load on that crown.

“ The Patient was Only 46% of the Way to MIP, with the Implant Taking the High Occlusal Load ”

Even more concerning, the high force was applied earlier to the implant than the surrounding natural teeth. Less than a second later into the bite, the implant is still subject to all that force. It's not until .03 seconds later that the adjacent teeth start to absorb the applied forces in that occlusal area.

“ When the Implant Loads Slightly Later than the Surrounding Teeth, I Call this ‘Cradling.’ ”

Post adjustment, I take a new movie. This is more what I'm looking for: the anterior and posterior teeth adjacent to the implant take on the initial loading. Even .10 seconds, when we reach MIP, those teeth demonstrate higher forces than the implant—but notice, the implant is still part of the occlusion. When the implant loads slightly later than the surrounding teeth, I call this “cradling.”

This is not my idea of a great occlusal scheme. The patient can't even feel it, but over time, the implant will take on repeated high stress and anything could happen—fracture, perimplantitis, bone loss, screw loosening, etc. But the good news is that I have objective data to see where (and when) the problem is occurring. I can use the T-Scan data to guide my occlusal adjustments on the implant crown.

“ Getting this Occlusal Scheme to Where it Needed to be Requires that Fourth Dimension: Timing. ”

I was able to time when the implant began to load by identifying how force is distributed over the dentition throughout the course of the bite. I could not do this with the traditional occlusal methods we have today: patient feedback, articulating paper, wax, shim stock foils, imprints, etc. I'm able to control the occlusal situation of the patient by having objective bite force data to complete the equilibration, ensuring the long term function of the implant, and managing the prosthesis with measurement going forward.

At recall hygiene appointments, a new movie is taken to insure the occlusal scheme is still favorable for the implant prosthesis. I have found adjustments may need to be made over the life of the implant. However, that quick adjustment saves time, heart muscle, and stomach lining, compared to loose or broken implant prostheses.

I find that patients cannot detect an implant prosthesis pre-maturity with any consistency. However, when I have completed the computerized occlusal management, they tend to be surprised at how much better the bite feels than before I adjusted.



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ALIGNERS - RECENT DEVELOPMENTS AND CLINICAL ASPECTS

By Dr. Shiu Chi Min

Aligners have been used for over a decade. Nowadays, over a million of aligners have been dispatched to patients. But do we know all the myths in the aligners that we had provided? With the advancement of the digital technology, the movement of the teeth can be planned, predicted, and tracked.

The history of aligners can be traced back to the 1926 by Remensnyder, but in the good old days we can remember the name of Dr. Kiesling, in which was famous for the Kiesling setup for estimating the outcome of movement of the teeth by repositioning the required teeth as planned with wax up, called it as the 'Tooth positioning appliance'. Later, Sheridan invented the the Essex aligners, mild to moderate crowding can be solved. In 1997, Align technology was established to combine the former Aligner techniques and combine them with CAD/CAM technology. After years of experience, tooth movements can be achieved. With the invention of digital orthodontics, the treatment planning, the movements of the teeth can be planned and monitored in a predicted way. Recently, the Aligner systems are further flourished with the introduction of Wrap around technology. ClearCorrect and Trio Clear systems are one of the pioneers in integrating this technology into their Aligner systems.

Dental monitoring is another breakthrough in digital dentistry. It was established in 1990 and integrating the Artificial intelligence into daily dental practice for monitoring, communicating with the patients.

Orthodontic treatment can be treated with both aligners and braces, or either one of them.

There are advantages and disadvantages of the Aligner treatment. Traditionally, the aligners mainly used different sets of plastics to move the teeth with prescribed distance. Teeth can be moved bodily or by tipping. Attachments were incorporated onto the teeth to perform specific movements. With the advancement of the materials science, there were a breakthrough for the plastic in fabricating the aligners. And they were used with extension beyond the gingival for a few millimetres for wrapping the tooth. The purpose of this extension is just want to alter of the position of the centre of resistance or movement of the tooth. That means that we can provide teeth movement more effectively and efficiently in treating patients.

Patients who need orthodontic treatment may have different aetiology. We should aim at doing a good treatment planning before deciding the types of treatment. If aligners were prescribed, several issues should be noted, namely non tracking, difficult rotations, posterior openbite, premolars rotations, openbite and extrusions. More will be coming up. Stay tuned.



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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



CEREC Tessera™

Advanced Lithium Disilicate

Introduction

As a result of the growth of single-visit CAD/ CAM dentistry, dental professionals now have a wide offering of indirect, machinable restorative materials to choose from. The myriad of materials available for chairside single-visit dentistry can be categorized according to composition, microstructure, mechanical properties, and esthetic characteristics. Another very important attribute that should not be overlooked is a material's impact on procedural workflow, with careful consideration given to the overall speed and simplicity of working with the material throughout each step.

Background

The application of materials science is unique in dentistry because of the complexity of the oral cavity, which includes bacteria, high masticatory forces, ever-changing pH, and a warm, fluid environment. In addition, when dental materials are placed into the mouth as restorative materials, there are very specific requirements for manipulation of the material.

Knowledge of materials science and biomechanics is necessary when choosing materials for specific dental applications, as well as when determining the best solution for restoration of tooth structure and replacement of teeth. The characteristics of an ideal restorative material are described as fulfilling requirements applying to the:

- Physical and mechanical properties of the material
- Technical features of the material from the perspective of the dental professional
- Patient factors of acceptability
- Other clinical aspects that contribute to the material's effectiveness, such as workflow integration

Material overview

CEREC Tessera blocks are a tooth-colored Advanced Lithium Disilicate (ALD) high-strength glass ceramic material designed for chairside CAD/CAM applications. The combination of glass and high crystal content allows the material to be fired at an accelerated speed—4 minutes 30 seconds in the CEREC SpeedFire furnace—with no detriment to material strength or durability. At the time of this publication, CEREC Tessera blocks are indicated for full-contour single-unit anterior and posterior restorations, including crowns, inlays, onlays, and veneers.

Composition: Optimized microstructure

The advanced formulation of CEREC Tessera blocks is comprised of two essential crystals: lithium disilicate ($\text{Li}_2\text{Si}_2\text{O}_5$) and virgilite ($\text{Li}_{0.5}\text{Al}_{0.5}\text{Si}_{2.5}\text{O}_6$), which is an LAS (Lithium Aluminium Silicate) type of crystal. Additionally, during the firing process, new virgilite crystals are formed on a nano-growth scale.

These needle-like crystals, measuring approximately $0.5\text{ }\mu\text{m}$ in length, are embedded in a zirconia enriched glass matrix. Together, these material constituents combine to create a robustly reinforced, high-density restorative material. The dense interwoven crystal composition of CEREC Tessera blocks is key to their high strength and serves to virtually eliminate the presence of microcracks and subsequent crack propagation. The principle here is similar to steel reinforced concrete: Within CEREC Tessera blocks, the lithium disilicate provides compression strength, while the newly formed virgilite increases the pre-compression stress.

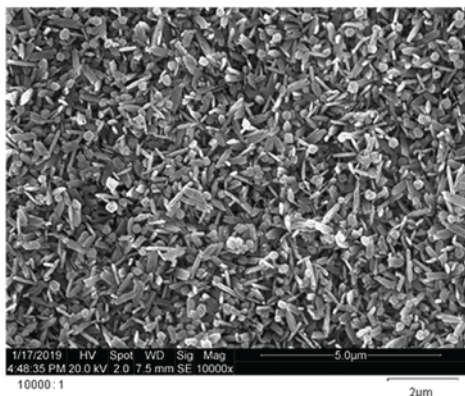
Material workflow

Designed to take full advantage of the CEREC single-visit chairside restoration workflow, the advanced formulation of CEREC Tessera facilitates one simplified processing pathway—mill, glaze, fire, and seat—which helps eliminate any risk of variability in material performance. And with CEREC Tessera's unprecedented firing time of 4 minutes 30 seconds in the CEREC SpeedFire, the entire CEREC chairside single-visit workflow can be accomplished as expeditiously as possible.

Material strength

The compressive strength of human enamel (384 MPa) and dentin (297 MPa), and fracture strength of a natural tooth (molar = 305 N; premolar = 248 N), offer excellent mechanical standards to determine the optimal strength for restorative dental materials.¹

The behavior and performance of CEREC Tessera restorations were evaluated in several standardized in-vitro tests. These tests provide preliminary information about the performance of a material when it is used for the recommended indications. In biaxial strength tests, CEREC Tessera measured >700 MPa. The increased strength value of CEREC Tessera blocks is due in part to matrix-firing (in 4 minutes 30 seconds in the CEREC SpeedFire furnace with spray glaze)



CEREC Tessera
microstructure

and also the material's unique strength- enhancing formulation. CEREC Tessera can also be fired in a traditional porcelain oven, however, doing so requires a longer firing time.

Esthetic properties

The same microcrystal composition (lithium disilicate and virgillite) of CEREC Tessera that is responsible for the material's high biaxial and flexural strength also contributes to its highly esthetic and dynamic light refraction, transmission, and absorptive properties that mimic the visual vitality of natural dentition.

CEREC Tessera material provides a natural opalescence, lifelike fluorescence, and high translucence. Radiopacity of the material is also excellent, and is an important characteristic to diagnose secondary caries, determine the proximal contour of the restoration and its contacts with adjacent teeth, and also to distinguish restorative material from gaps and voids.

Conclusion

When identifying an ideal restorative material, all clinical characteristics must be considered and carefully evaluated. Clinicians who choose Advanced Lithium Disilicate for their specific practice needs can have confidence in its strength, esthetics, speed, and simplicity.

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THANK YOU  for reading the first edition of the Dental Diaries. We hope you enjoyed your time with us.

Please send us any valuable **advices, feedbacks or enquiries** via the following contact:

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