

New era unfolds for Minimally Invasive Cosmetic Dentistry (MiCD)

Jointly organised by the MiCD Global Network and Shofu Dental Asia-Pacific, MiCD expert workshop was held on 19 Sep 2022, at the EQ Hotel, Kuala Lumpur, Malaysia. The expert panel comprising of MiCD advocates and clinical trainers shared their knowledge and expertise to collectively develop a strategy and framework for the next phase of MiCD in clinical practice.

MiCD concept and treatment protocols were first conceptualised in 2009 by Dr Sushil Koirala and a group of like-minded clinicians with the support of Shofu Dental as the official partner – at a time when the practice of aesthetic dentistry which was more invasive, and minimally invasive dentistry primarily focused on prevention and management of dental caries. MiCD was introduced as “a holistic approach that explores the smile defects and aesthetic desires of a patient at an early stage and treats them using the least invasive option in diagnosis and treatment technology by considering the psychology, health, function and aesthetics of the patient”¹

In February 2010, the MiCD Global Network was formed to provide a platform for dental professionals to adopt and learn about MiCD and its applications in routine clinical practice. Over the years, MiCD has gained popularity as a treatment philosophy that encouraged clinicians to provide holistic, patient-centric treatment that integrates minimally invasive treatment techniques with aesthetic dentistry to enhance the patient smile while selecting the most conservative restorative options that preserve natural tooth structure.

The key benefits of MiCD includes: preservation of natural tooth structure while achieving the desired aesthetics; promotes oral health, function and aesthetics with a positive psychological impact; expands the treatment options with BioSmart aesthetic



restorative materials; increases patient confidence while reducing treatment fear and anxiety; promotes trust, builds patient loyalty and enhances the professional image; and embraces the “less is more” strategy.

Dentistry has evolved at a rapid pace in the past decade with new treatment techniques, advances in dental material science and increasing patient demand. To keep abreast of recent changes, it became evident that updates in the MiCD treatment philosophy and protocols were needed. This new framework is simple, comprehensive, easy to implement and practical, to enable both experts and new generation of practitioners to better understand the essence of MiCD and treatment protocols to incorporate the guiding principles into daily clinical practice.

MICD EXPERT WORKSHOP DISCUSSION

With the expert panel – Dr Ronnie Yap (Singapore), Dr Marcelo Lasmar (Brazil), Dr Sonny Burias, Dr Kim Fajardo, Dr Cez Acero (Philippines), Dr Amit Gulati, Dr Anand Narvekar (India), Dr Hussein Naama (Iraq), Dr Melvin Sia, and Dr Sonia Lee (Malaysia) – the MiCD expert workshop started with introductions and participants expressing what MiCD meant to them. Some key words that resonated with all participants were “empathy, passion, value, health, preservation, holistic, patient-centric, doing what’s right, less is more and phased treatment”.

Keeping the momentum, Patrick Loke, managing director of Shofu Dental Asia-Pacific shared a presentation on “The Past, Present and Future of MiCD” to highlight

the growth of the MiCD movement and the integral role Shofu has played as the official partner of MiCD in its global success, through the MiCD Global Network with skill-based training programmes and MiCD symposiums over the years. Loke emphasised that Shofu is committed to support the MiCD movement through product developments, such as Shofu's range of bioactive composites and smart solutions for direct and indirect restorations, and is looking forward to supporting the next phase of MiCD.

Dr Ronnie Yap, advocate and clinical trainer for MiCD, followed with a presentation on the "MiCD Movement through the MiCD Global Network and the Clinical Trainers' role in taking MiCD towards the next phase". The presentation highlighted how the MiCD Global Network will drive the MiCD movement with skill-based training programmes and provide a common platform for like-minded dental professionals to network and share their MiCD experience. Additionally, Dr Yap explained the importance of providing personalised treatment that meets the patient expectations often by "doing what's right" and how MiCD has been adopted into his practice philosophy.

The panel of experts then proceeded to a brainstorming session moderated by Dr Cez Acero on creating the framework for the next phase of MiCD. The panel deliberated collaboratively on the following areas:

- Identify and develop the key guiding principles that define MiCD as a concept that are practical and realistic to adopt in clinical practice
- Establish MiCD practice philosophy and create the treatment workflow principles
- Develop a blueprint for the standardisation of MiCD training protocols for direct restorations

OUTLINING THE NEXT PHASE OF MiCD IN CLINICAL PRACTICE

The panel highlighted that three key areas should be addressed as part of the MiCD guiding principles with *Biology*, which looks at restoring the health, structure and function of oral tissues, placing restorations with bioactive restorative materials that provide adequate

strength, function and preserve natural tooth structure. *Logical* treatment philosophy that is practical, realistic predictable and patient-centric to finally create *Beautiful* restorations that provide natural, life-like aesthetics to rejuvenate patient smiles and, in turn, change their lives (Fig. 1).

LESS IS MORE

There should be a change in mindset when applying the MiCD practice philosophy of "less is more" in routine clinical practice. The clinician should always focus on preservation of natural tooth structure whenever possible starting from the stage of diagnosis and treatment planning which would lead to selection of the least invasive and most appropriate treatment option resulting in less biological and financial cost to the patient.

Benefits of the MiCD "less is more" philosophy

- Patient: Preservation of natural tooth structure, less invasive treatment, more comfort and minimised cost
- Dentist: Phased treatment approach that is attainable, predictable and relevant to the times, with more control over the treatment outcomes and provide value to the patient
- Dental practice: Increased service value,

patient acquisition and retention leading to increased profitability

THE MiCD TREATMENT WORKFLOW

BioConservation

- **Diagnosis and treatment plan:** The MiCD concept promotes personalised dental treatment strategy with a focus on holistic patient-centric care where communication with the patient is crucial to better understand their needs, expectations, behaviour and overall health. During diagnosis and treatment planning, MiCD advocates the change in mindset, greater empathy and value to the patient by selecting the least invasive and most conservative approach that preserves the maximum natural tooth structure.
- **Aesthetic blueprint:** The aesthetic blueprint is developed with the end goal in mind and acts as an indicator to ensure predictability when proposing the treatment plan to the patient. Important elements in the blueprint are smile design, restorative plan, material selection and mock-up.
- **Less biological cost:** Preservation of sound tooth structure by selecting non-invasive or minimally invasive techniques within the restorative plan is essential when adopting the "less is more" practice philosophy and



Fig. 1: BioLogically sound principles to produce functionally predictable and beautiful restorations in the best interest of the patient

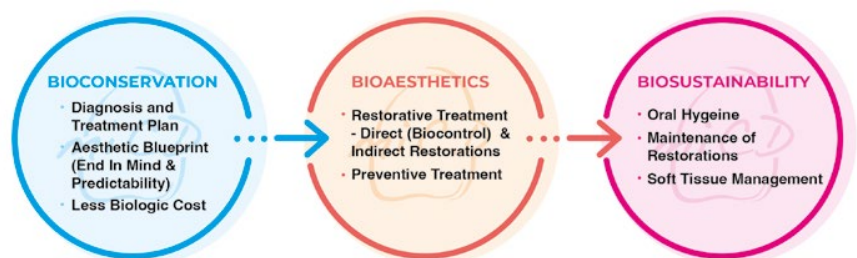


Fig. 2: Treatment workflow: BioConservation, BioAesthetics, BioSustainability

CLINICAL FEATURE

Fig. 3: Class IV restorations



Fig. 4: Direct veneer



developing a phased treatment approach with the best interest of the patient.

BioAesthetics

- Preventive treatment:** Prevention plays an important role in preservation of sound tooth structure and ensuring long-term success of the restorative treatment rendered to the patient. The phased treatment approach has an important component which is “keep in view” specially in the management of dental caries and tooth wear. The final restorations are placed only once the patient oral conditions are stabilised.
- Restorative treatment:** MiCD restorative approach has a focus on selecting the most appropriate and minimally invasive treatment option based on the patient needs. Therefore, non-invasive or minimally invasive direct restorations are considered first, and indirect restorations should be considered only if needed. The advantage of direct restorations is that the dentist has more control over the final restorative outcome and minor modifications can be easily made in the patient’s mouth. However, if multiple restorations are required, minimally invasive indirect restorations would be more suitable to reduce clinical chair time and increase patient comfort.

BioSustainability

- Oral hygiene:** It is known that suboptimal oral hygiene affects the long-term success of any restoration. MiCD treatment workflow encourages all dentists to educate their patients on the importance of maintaining good oral hygiene to protect their overall health and wellbeing.
- Maintenance of restorations:** An often-neglected area in restorative treatment is the maintenance of the restorations placed over time. Most restorative materials undergo wear and tear due to diet, habits and oral hygiene of each individual. Therefore, creating a maintenance plan with periodic recall for each patient is important where the dentist has an opportunity to assess the restorations placed, touch-up where required and polish the restorations.

- **Soft tissue management:** Periodontal health is an important aspect of oral health. Periodontitis is becoming a common cause of restorative failure and in many cases is linked to systemic conditions such as diabetes. Soft tissue management is therefore considered critical and dentists are encouraged to consult periodontists when required to manage the patient more holistically.

MICD DIRECT RESTORATIVE PROTOCOLS

The expert panel outlined the basic guidelines, unique techniques and material selection for the following direct restorations commonly placed in routine clinical practice and smile modification procedures (Figs. 3-7).

- Class IV restorations (Anterior fracture)
- Direct veneer
- Diastema closure
- Management of erosive tooth wear
- Class II restorations

Biological layering technique with bioactive composites

As dental material science advances the aesthetic and functional capabilities of direct composite provides clinicians with more restoration options that can be placed with increased predictability and longevity. The Shofu range of bioactive direct composites provides additional benefits of reduced plaque accumulation, prevention of secondary caries and antibacterial properties that increase longevity of the restorations.

The panel collectively agreed to recommend the use of bioactive composites with the MiCD restorative protocols and modify the MiCD composite layering technique. The “BioLogical Layering Technique” was suggested as the updated layering approach adapted to suit each patient depending on the level of complexity and depth of the restoration, to achieve natural life-like aesthetics that match closely with adjacent natural teeth.

CONCLUSION

MiCD with its practice philosophy of “less is more” has become more essential in this era where consumer behaviour is driven by health and wellness, conservation, sustainability and more bio-economics. The MiCD guiding principle is based on BioLogical treatment goals that are relevant tools in building a routine to a successful clinical practice. Shofu remains committed to supporting the dental community with future programmes and learning events, through the MiCD Global Network while engaging the Shofu-MiCD clinical trainers. [DA](#)

¹Dr Sushil Koirala, *Minimally Invasive Cosmetic Dentistry-Concept and Treatment Protocol, Cosmetic Dentistry 4-2009: 28-33*

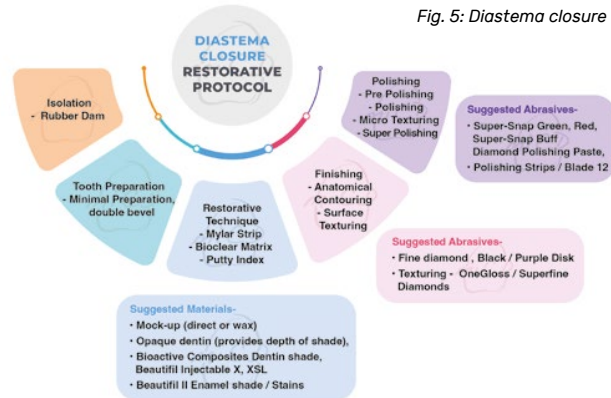


Fig. 5: Diastema closure



Fig. 6: Management of erosive tooth wear

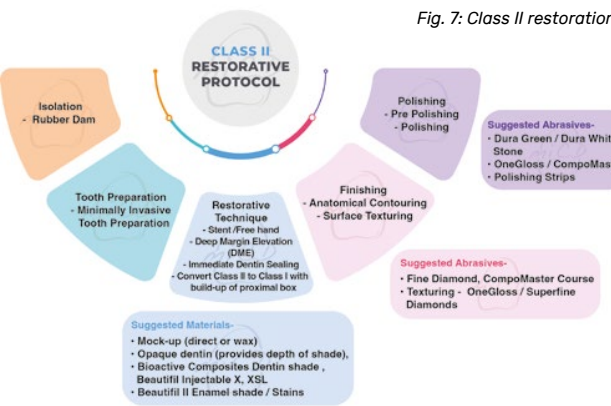


Fig. 7: Class II restorations