DENTAL TRIBUNE Asia Pacific Edition

Trends & Applications

A Vedic Smile approach to dentistry

Dr Sushil Koirala talks about the Minimally Invasive Cosmetic Dentistry concept and why it matters to dental professionals

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MIAMI, USA: An extremely skilled clinician with over 17 years of experience in Cosmetic Dentistry, Dr Sushil Koirala says that technology should work to improve health, never to compromise it. His Minimally Invasive Cosmetic Dentistry (MiCD) treatment protocol is based on consciousness, nature and evidence-based technology that really respects the patient’s long-term health and needs.

Koirala, who is the founder and president of the Nepalese Academy of Cosmetic Dentistry and of the South Asian Academy of Aesthetic Dentistry, combines his MiCD protocol philosophy and ethics, scientific research, and what can be described as a Vedic Smile or holistic approach to dentistry.

Worried about the rapid advancement in aesthetic procedures, Koirala began to question if the aim of many dental techniques was to simply give health or offer the patient a quick makeover, regardless of their long-term consequences. Years of practice led him to develop his guidelines for MiCD, a set of principles that stress early diagnosis, disease intervention, selection of minimally invasive treatment procedures, and use of evidence-based materials, taking into account as well the psychological aspects, ethnic background, and actual health needs of the patient.

A Pioneer Paper

In a ground-breaking article entitled “Minimally Invasive Cosmetic Dentistry: Concept and Treatment Protocol,” Dr Koirala offered a much needed guide to minimally invasive cosmetic dentistry, a discipline that up to now has been more concerned with appearances than with clinical evidence. The article, published in Cosmetic Dentistry magazine, was translated into many languages and attracted many followers eager to have a clinical protocol for many dental cosmetic procedures that stressed something that while obvious was not widely followed — preserving as much natural tissue as possible.

The ability to differentiate between what a patient wants and what he or she actually needs is a large ethical question in cosmetic dentistry. In order to address this issue, Dr Koirala has developed what he calls a simple self-consciousness-pre-treatment test, “whereby I ask myself four simple yet honest questions”:

- How would I treat my own family members?
- Will the treatment plan remain the same regardless of who the patient is?
- Am I competent and happy enough to take up the case?
- Is the patient happy with the Biological, Financial, and Time (BFT) cost estimation of the treatment?

Dr Koirala explains that “whats a patient wants and what a patient needs are two different things. The needs are the basic treatments a dentist can provide. But the wants are of different variety, like choosing clothes in a store; you choose the color of the teeth, the texture of the teeth, the shape of the smile.”

What is Beauty?

Since the definition of beauty is different in each culture, it also affects cosmetic procedures.

“For Western-style contemporary smile aesthetics, beauty is white teeth and a straight smile, but the same parameters don’t apply in Asia,” he explains. “In fact, Asian patients don’t mind having a little bit of overlapping teeth, which they see as natural. So we cannot use the same formula globally in cosmetic dentistry.”

Dr Koirala warns that “you must be conscious while choosing the right technology for your practice, as technology may not always be health-oriented.” As a sample, he thinks that CAD/CAM restoration technology still has to be refined in order to be adopted fully in restorative dentistry. “CAD/CAM presently demands extension for insertion, Strength, and Aesthetics,” thus, “we are compromising health for technology.”

“Clinicians still believe that articulating paper mark gives them ideal force component in occlusal adjustment,” he continues. “The ‘big mark big force, small mark small force’ concept has no scientific evidence, but most cosmetic dentists rely on articulating paper marks to do occlusal force adjustment. Computerized Occlusal Analysis System, which can objectively measure occlusal forces of each tooth with the time sequences of occlusal contact, was developed almost 5 years ago. It’s hard to understand why clinicians neglect scientific facts about articulating paper marks and still believe in it for balancing the force component in smile design. This is why I advocate consciousness in dentistry, because technological information is not enough; you need consciousness to rightly use it for mankind.”

This is the background against which Dr Koirala revolved and led him to develop the MiCD treatment protocol, which he summarizes “as bringing consciousness, nature and technology together”. Rather than inflicting one’s own definition of beauty on the patient, the dentist must listen to and understand the personal and cultural desires of the individual undergoing the dental work, he says. Dr Koirala strives to preserve the definition of beauty set forth in the cultural tradition of the patient rather than following the status quo of a broad, one-size-fits-all plan.

Changing the Mindset

While the principles of MiCD may seem complicated, the protocol is easy to follow and very practical. “Don’t because it doesn’t require changing clinical techniques, but using them in a conscious manner is crucial for both the patient and the dentist.”

“We don’t say, ‘Don’t cut the tooth this way,’ we say, ‘Cut less,’” explains Dr Koirala. In fact, the MiCD protocol does not reject any cosmetic procedure, including full crowns or bridges, it just asks the dentist to use their consciousness properly to think if invasive options can be avoided, and to use them only as a last resort. In other words, the only thing a dentist has to do to comply with MiCD is to change the priorities for a given procedure, to alter his or her mindset.

The framework of MiCD establishes five golden principles:

1. “Sooner the Better”—early exploration of diseases and defects to minimize possible invasive treatment in future.
2. “Smile Design Wheel”—follow these principles and respect the psycho-spiritual and aesthetic needs of the patient.
3. “Do no Harm”—select treatment procedures that maximize preservation of healthy tissue.
4. “Evidence-Based Approach”—selecting materials and equipment must be based on evidence.
5. “Keep in Touch”—focus more on regular maintenance, timely repair and strict evaluation, which should be understood by the patient.

As Dr Koirala says, they are simple guidelines to accommodate every treatment in a dynamic protocol because science constantly changes.

“A good protocol should incorporate changes based on scientific evidence,” he continues. “The philosophical part may be the most difficult because it’s subjective, which is why we give a questionnaire to the patient whereby he decides what he wants. We give him the science and inform him about...
It is not the technique, but he decides what type of aesthetics he wants.”

High-quality materials

When Dr Koirala published his MiCD protocol in 2009, he not only gained a following among dentists, but also the respect of high-quality dental manufacturers.

“I met with Mr. Patrick Loke,” Koirala says referring to SHOFU’s Asia-Pacific Marketing Director, “who told me he liked the concept of MiCD because his company is concerned with the health of the patient, and with developing his-aesthetic products in dentistry.”

In SHOFU he seems to have met his match and you can detect his dedication and conviction when he says, “I’m very happy using Giomers (a bio-aesthetic restorative material), so much so that it inspired me to write a book,” he adds referring to a new type of restorative material whose name is a hybrid of the words “glass ionomer” and “composite” (see Sidebar, page 9).

Dr Koirala is now conducting long-term clinical trials using various dental materials, with a focus on the MiCD protocol and its acceptance as a way to accomplish clinical results.

He believes he has developed a concept that is good for the patient, good for the dentist, and good for society. The MiCD protocol is in its preliminary stage worldwide, but the conferences he gave in South East Asia and South Pacific have been widely accepted. “This is the right time to come out with this new philosophy,” he explains, “so that in four or five years a new generation can start talking about the preservation of health in the long run.”

Non-Invasive Health

The medical sciences are moving towards non-invasive procedures, and adequate ways of health promotion to avoid oral diseases. In dentistry, however, minimally invasive procedures are being used routinely only in caries management.

“In the medical sciences it’s inherited not to cut tissue,” Dr Koirala continues. “If patients knew that to place a crown you need to cut the tooth’s enamel, they probably would not accept the treatment. You need to start at an early age, like 6 or 7, in order to detect various smile defects like orthodontic problems, everything that can affect oral health, including cosmetics, should be thought at an early age.”

“Dentists may use MiCD or not,” he adds, “but they all agree it’s the right approach. I want to encourage everybody to join the MiCD mission. Our MiCD Global Network (a web-based organization) is a group of dedicated professionals who wish to improve the knowledge of the clinician and the patient. Information technology can help promote these ideas through networks of dentists, people, and like-minded companies. We need to change our mindset.”

Dr Koirala plans to change the mindset through more international lectures, collaborating with like-minded clinicians and academicians, creating study clubs to exchange knowledge, and providing internet-based educational seminars.

“We are changing protocols for the health of the patient, and ultimately, dentists will win too, because it saves time on procedures and provides aesthetics and function. The treatment (function component) is secondary to me, as long as it preserves health, a harmonious function (the force component), and promotes aesthetics. We are not promoting a company here, but promoting health. And that is our first responsibility as clinicians. It is something that can be the pride of the profession.”

Resources

- www.micdglobalnetwork.org
- www.dental-tribune.com/articles/content/id/1749/scope/000000000/scope/specialities/region/international
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Reconstructing an anterior dentition with composite resin

A clinical case using IPS Empress Direct from Ivoclar Vivadent

Dr Gabriela Knaul Switzerland

Recreating the original tooth as accurately as possible is a challenging task for the operator. It also poses a challenge regarding the biomimetic tooth provide a sound base on which predictable aesthetic results can be achieved. This case study describes the restoration of a fractured anterior tooth with specific reference to the biomimetic properties of IPS Empress Direct (Ivoclar Vivadent).

A young female patient was dissatisfied with the appearance of her upper teeth, which resulted from an accident-related injury to tooth #11 a few years prior. After the dental trauma, the tooth was restored with composite resin but the patient wished to have corrective work done. Compared with the adjacent teeth, the remaining natural part of tooth #11 appeared yellowish, while the composite build-up appeared greyish and translucent. The clinical examination revealed that the teeth did not show any signs of decay and were in good condition overall in relation to the patient’s age. In addition, the patient also practised excellent oral hygiene (Fig. 1). With the exception of tooth #11, all teeth reacted to the sensitivity test. The probing depth of the gingival sulcus measured less than 5 mm. Tooth #11 also showed minimal percussion sensitivity. The peri-apical X-ray revealed traces of an apical lesion (Fig. 2). The root canal appeared to be extensively calcified. After discussions with the patient, root-canal treatment was planned for tooth #11. Subsequent internal bleeding was proposed in preparation for a new composite build-up. The oral cavity was isolated with a rubber dam before the build-up procedure. However, it is important to note that digital photographs only provide a rough indication of the placement of the different composite resins and staining materials, as they do not convey true colour. In this case, A5 Dentin, A2 Enamel, Trans Opal and Tetric Color white materials were used for building up the composite resin restorations.

A mock-up was prepared for the fabrication of a silicone matrix. The shape and context of the existing restoration were largely copied and transferred with the neighbouring tooth #12. Therefore, only small adjustments to the shape were necessary, such as a slight lengthening of the incisal edge in the distal region. Silicone putty was used to rebuild the restoration and to build the matrix and thinly distributed with a spatula. The defect had to be covered as far as possible. Some flowable Tetric EvoCeram was applied to the palatal defect margin of the pre-shaped matrix as far as possible. Some flowable material on the tooth is checked for correct fit. If the enamel material in the silicone matrix has been properly placed, it will reach the cervical margin of the defect. The flowable material on the tooth is thus displaced and fills out possible voids. Furthermore, it ensures good marginal adaptation.

The build-up of a tooth is a very sophisticated procedure, which requires careful planning. In order to ascertain and visualise the desired result before the tooth is built up, it is useful to draw up a map of the tooth’s characteristics, which will show areas that are highly translucent or opaque. A digital photograph that captures the pre-operative situations of irreversable use in the subsequent build-up procedure. However, it is important to note that digital photographs only provide a rough indication of the placement of the different composite resins and staining materials, as they do not convey true colour.

The restoration was initially polymerised from the labial aspect. Then, the silicone matrix was carefully removed and the build-up composite resin was polymerised from the palatal aspect. Small amounts of excess in the palatal and proximal areas were removed with a scalpel (size 12). The palatal surface prepared for this was produced to the desired width in the initial arc. Nevertheless, the proximal part of the restoration did not make contact with the neighbouring tooth at this stage. The chosen matrix technique may be an advantage in the creation of the most natural-looking proximal contours possible. As the proximal part of the restoration did not make contact with the neighbouring tooth at this stage, this may be an advantage in the creation of the proximal contours possible. As the proximal part of the restoration did not make contact with the neighbouring tooth at this stage, this may be an advantage in the creation of the proximal contours possible. 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Dr Gabriel Krastl

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Contact Info

Fig. 7: The built-up dentine core provides only very little space for the enamel material.—Fig. 8: The restoration is ready for polishing once it has been formed with translucent and white-opaque materials and sculpted.—Fig. 9: A natural looking surface texture and fine morphological structure is produced with a suitable polishing technique.—Fig. 10: The follow-up examination after four weeks, showing a normal clinical situation.—Fig. 11: The final X-ray showing the root canal filling and composite restoration.—Fig. 12: The smile of a satisfied patient.

Strength of a Hybrid ... ... Deliver like a flow

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The incisal part between the mameolons was filled with a special composite resin material (IPS Empress Direct Opal). A natural opalescent appearance was created with this technique. In addition, a white staining material (Tetric Color white) was selectively applied in order to re-create the whitish opaque areas of the enamel.

The restoration was completed by applying a final thin enamel layer (IPSEmpress Direct Enamel A2) on the labial side (Fig. 8). While the resin composite was still soft, the final surface texture of the restoration was created with a brush. The tooth shape was modelled such that it would help to reduce the subsequent finishing work to a minimum.

Finishing and polishing

Excess material was removed with a scalpel (size 12). Suitable finishers and polishers were used to adjust the surface gloss and micro-morphology of the tooth to that of the adjacent teeth. Restorative margins were finished and adjusted to the proximal and incisal areas were made with flexible discs. It must be noted that in labial areas these instruments have to be used with great care to prevent the destruction of the morphology and the accidental removal of enamel material. Concave areas in the buccal surface were deepened with silicone polishers. High-gloss polishing was performed with silicon-carbide-impregnated brushes (Astrobrush, Fig. 9).

Four weeks after treatment, the clinical situation looked healthy. The restoration in tooth #11 was highly satisfied with the overall result (Fig. 12).