A Vedic Smile approach to dentistry

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

Jaspreet M. de Paoli
DTI Latin America

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 Cosmetic Dentistry, combines in 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 advance in aesthetic procedures, Koirala began to question if the aim of many dental techniques was to improve health or to 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 Pager

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 in many languages and attracted many followers eager to at last 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 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”.

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

Dr Koirala explains that “what 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 a 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 long teeth and a straight smile, but the same parameters do not apply in Asia,” he explains. “In fact, Asian patients don’t mind having a little bit of overlap- ping teeth, which they see as natural. So we cannot use the same formula globally in cosmetic dentistry.”

Dr Koirala warns that “you must consider the patient’s personal and cultural desires when 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 relay 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 is 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 underlying 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.

Regarding teeth whitening for instance, Dr Koirala says that while some people may need it, “more often than not the color of the teeth is a perfect balance designed by nature. The eyes, teeth and skin tone should be in harmony. If the teeth are too white, it may look awkward and unnatural.”

Changing the Mindset

While the principles of MiCD may seem complicated, the protocol is easy to follow and very practical. Dr Koirala says that it doesn’t require changing clinical techniques, but using them in a conscious manner. It is for both the patient and the dentist.

“We don’t say, ‘Cut the tooth this way,’ we say, ‘Cut less,’” explains Dr Koirala. In fact, the MiCD protocol does not reject any conventional protocols, including full crowns or bridges, it just asks the dentist to use their consciousness properly to think of 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 psychology, health function and aesthetics of the patient.
3. “Do no Harm”—select treatment procedures that maximize preservation of healthy tissue.
4. “Evidence-Based Approach”—select materials and equipment must be based on scientific 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 simply to date every treatment in a scientific 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...
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 "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 Asia 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 is inherent 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 type of material used 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

Lisa and Lina, two type-B sterilizers with one single aim:
to meet your needs and adapt to your practice requirements through
Lisa’s automatic traceability system and made-to-measure cycles,
and the essentials of sterilization with Lina.

wh.com
Reconstructing an anterior dentition with composite resin

A clinical case using IPS Empress Direct from Ivoclar Vivadent

Dr Gabriel Krastl

Re-creating the original tooth

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 bleaching was proposed for a new composite build-up. The oral cavity was isolated with a rubber dam before the root canal was opened. The canal was difficult to locate, despite using an operating microscope. It was finally found at a depth of 15 mm. The root canal was prepared and a calcium-hydroxide medicated filling placed for a period of two weeks. Subsequently, the root canal was filled with thermoplastic gutta-percha points and sealed. The cervical structure of tooth #11 was internally bleached with sodium perborate until the tooth structure attained the shade of the adjacent tooth.

Analysis of the tooth shape and shade

A closer look at the two central incisors revealed an otherwise slightly asymmetrical (Fig. 3), as the crown of tooth #11 appeared somewhat wider. When the patient was asked about this, she stated that she had had a median diastema that was closed after the restorative work on her dental trauma had been finished. The appropriate materials for replacing dentine and enamel were selected using the shade guide from the IPS Empress Direct set. The dentine materials were matched to the cervical area of the tooth and the enamel material was selected in accordance with the incisal area of the adjacent tooth.

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 irreversible 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. In this case, A2 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 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 patty was used to rid the matrix with information provided by the mock-up. Since only the palatal part and the incisal edge of the silicone matrix were needed for the building up tooth #11, the matrix was correspondingly trimmed with a scalpel.

Preparation, adhesive pre-treatment and adjustments to the adjacent tooth

The old composite resin restoration was removed with rotating instruments and the enamel margins were bevelled. A wide area was prepared in the palatal region (approximately 2 mm) to ensure the invisibility of the final restoration margin (Fig. 4). A rubber dam was placed over the anterior teeth (up to the first premolar) to allow a full view of the operating area. Ligatures helped to isolate the anterior teeth requiring treatment and to replace the rubber dam towards the gingival margin. A three-step syringe technique for adhesive etching (e.g. Syntac Classic) was used for the adhesive pre-treatment. Careful inspection of the teeth to make the two anterior teeth appear symmetrical and to close the diastema, the mesial region of tooth #21 had to be widened a bit with enamel material.

The main aim of the anatomical layering technique is to create an artificial “enamel shell”, which establishes the palatal and proximal contour of the original tooth. In this case, a small amount of transparent enamel material (A2 Enamel) was placed in the trimmed silicone matrix and thinly distributed with a spatula. The defect had to be covered as far as possible. Some flowable Tetric Ecolight was applied to the palatal defect margin of the prepared tooth #11. Then, the silicone matrix, together with the enamel material, was placed on the anterior tooth from the palatal aspect and 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 restoration was initially polymerised from the labial aspect. Then, the silicone matrix was carefully removed and the built-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 in this way produced the desired width in the incisal area. Nevertheless, the proximal part of the tooth required additional margin creation with the neighbouring tooth at this stage. The chosen matrix technique allowed the easy creation of the most natural-looking proximal contours possible. As the matrix was removed, the incisal edge of the tooth that were located super-gingivally were necessary. For this reason, the preparation of the teeth and as they do not convey true colour. In this case, A2 Dentin, A2 Enamel, Trans Opal and Tetric Color white materials were used for building up the composite resin restorations.

The old composite resin restoration was removed with rotating instruments and the enamel margins were bevelled. A wide area was prepared in the palatal region (approximately 2 mm) to ensure the invisibility of the final restoration margin (Fig. 4). A rubber dam was placed over the anterior teeth (up to the first premolar) to allow a full view of the operating area. Ligatures helped to isolate the anterior teeth requiring treatment and to replace the rubber dam towards the gingival margin. A three-step syringe technique for adhesive etching (e.g. Syntac Classic) was used for the adhesive pre-treatment. Careful inspection of the teeth to make the two anterior teeth appear symmetrical and to close the diastema, the mesial region of tooth #21 had to be widened a bit with enamel material.

The main aim of the anatomical layering technique is to create an artificial “enamel shell”, which establishes the palatal and proximal contour of the original tooth. In this case, a small amount of transparent enamel material (A2 Enamel) was placed in the trimmed silicone matrix and thinly distributed with a spatula. The defect had to be covered as far as possible. Some flowable Tetric Ecolight was applied to the palatal defect margin of the prepared tooth #11. Then, the silicone matrix, together with the enamel material, was placed on the ante-
For the 1st time...

It’s PLAIN to see

**PINK / RED**

A thin deposit of plaque will stain pink / red. These are areas where surfaces have been cleaned recently and the biofilm is immature.

**LIGHT BLUE**

Areas that are light blue indicate acid production from the plaque bacteria and the biofilm will have a pH of approximately pH4.5 or lower. This is a high risk biofilm.

**BLUE / PURPLE**

Thick deposits of plaque will stain purple. These are areas which have not been cleaned in the past 48+ hours and a complex biofilm has developed. This thick plaque is a cause of gingivitis.

GC Tri Plaque ID Gel™ helps to identify

- **New** plaque
- **Old** plaque
- **Acid-producing** plaque

**Experience**

better patient communication
Yet another milestone in the Giomer family of restoratives, BEAUTIFIL Flow Plus is an injectable hybrid aesthetic restorative that exhibits superior strength, durability and aesthetics for enhanced applications in direct cosmetic dentistry.

**The Plus benefits for you...**

- Ideal density and stackability for effortless sculpting
- Remarkable mechanical properties
- Easy injectable delivery
- Extensive application capabilities including load-bearing surfaces
- Simulates life-like aesthetics with excellent shade match
- Benefits of fluoride with anti-plaque effect

For further information, contact your Shofu dealer TODAY!

**BEAUTIFIL Flow Plus**

The subsequent layers were placed with opaque dentine material (IPS Empress Direct Dentin, A3) and the dentine core was built up (Fig. 6). Compared with natural teeth, this part of the tooth was larger. As a result, the space available for the enamel coating was very limited, so it made sense to cover the enamel level with dentine material as well. This measure prevented the restoration margins from becoming visible over the grey line. Towards the incisal part, the dimensions and the morphology of the dentine core were determined by the neighbouring and contra-lateral teeth. In this case, mamelon structures were created. In the incisal area, enough space was provided for the translucent enamel materials (Fig. 7). Each increment was cured for 20 seconds using a bluephase LED light.

The incisal part between the mamelons 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 whith opaque areas of the enamel.

The restoration was completed by applying a final thin enamel layer (IPS Empress 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 adjustments 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 virtually invisible and symmetry was restored in the anterior dentition (Fig. 10). The radiological follow-up exam did not show any irregularities (Fig. 11). The patient was free from complaints and highly satisfied with the overall result (Fig. 12).