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.

Preserving Health, Enhancing Smiles

Patients today are much more educated and demanding regarding dental treatments. Amalgam is a perfect example. A high-percentage of patient demand not to have amalgam fillings for cavities, but a tooth-color material. In the past, a restoration with amalgam required cutting a lot of tooth structure, but the new direct tooth-colored restorative materials cause less damage to the tooth and provide better aesthetics.

"Many patients are now going for direct aesthetics restorations, non-prep veneers, minimally preparation indirect restorations, and mini-implants, which are less invasive," says Patrick Lake, CEO of BIOH's General Marketing Manager for Asia Pacific. "The trend is growing.

The goal now is achieving good aesthetics with minimally invasive treatment with the support of MiCD instruments and bio-aesthetic materials," Lake continues.

We are the official partner of the MiCD movement, which motto is Preserving Health Enhancing Smiles. We are fully committed to support their educational events for both public and dental professionals, such as workshops, lectures and exhibition.

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. No harm—select treatment procedures that maximize preservation of healthy tissue.

4. Evidence-Based Approach—selection of materials and equipment must be based on science.

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, easy to use, and they date every treatment in a scientific protocol because science constant 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 2008, 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, but he decides what type of aesthetics he wants.”

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 Southeast 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 cases 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 serious 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 its 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.”

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Reconstructing an anterior dentition with composite resin

A clinical case using IPS Empress Direct from Ivoclar Vivadent

Fig. 1: 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 tooth 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 in preparation for a new composite build-up. The oral cavity was isolated with 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 intracoronally bleached with sodium perborate until the tooth structure acquired the shade of the adjacent tooth.

Analysis of the tooth shape and shade

A closer look at the two central incisors revealed a slight asymmetry (Fig. 1), 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 teeth.

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 situation of irreplaceable 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, A3 Dentin, A2 Enamel, Trans Opal and Tetric Color white matrices were used, which were held in suspension tables, in the ray area (e.g. chin rests on OPG), also ideal for acrylic glass (suited for solaniam). The build-up of a tooth was initiated by etching (e.g. Syntac Classic) was used for the adhesive pre-treatment. High-accuracy digital matrix on the prefer to make the two anterior teeth appear symmetrical and to close the diastema (size 12). The palatal margin of the prep was made of a composite "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 Ecolox 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 aspect from the palatal aspect and checked for correct fit. If the enamel material in the silicone matrix had 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 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 was then produced to the desired width in the incisal area. Nevertheless, the proximal part of the restoration needed to be surrounded with gutta-percha points and finally with a three-step etching (i.e., Syntac Classic) and the adhesive system. The silicone matrix was removed from the tooth, the defected tooth was slightly asymmetrical (Fig. 1), as the crown of tooth #11 appeared somewhat wider. The enamel material 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 teeth. 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 situation of irreplaceable 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, A3 Dentin, A2 Enamel, Trans Opal and Tetric Color white matrices were used, which were held in suspension tables, in the ray area (e.g. chin rests on OPG), also ideal for acrylic glass (suited for solaniam). The build-up of a tooth was initiated by etching (e.g. Syntac Classic) was used for the adhesive pre-treatment. High-accuracy digital matrix on the prefer to make the two anterior teeth appear symmetrical and to close the diastema (size 12). The palatal margin of the prep was made of a composite "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 Ecolox 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-
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thin composite layer significantly enhanced the appearance of the incisal, palatal and proximal contours of the tooth (Fig. 7).

Build-up of the dentine core
The subsequent layers were placed with opaque dentine material (IPS Empress Direct Dentin, A3) and the dentine core was built up (Fig. 8). 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 prevents the restoration margin from becoming obvious along 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. 9). Each increment was cured for 20 seconds using a bluephase LED light.

The incisal part between the mamelons was filled with a 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 (IPS Empress Direct Enamel, A2) on the labial side (Fig. 10). 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-imregnated brushes (Astrobrush; Fig. 11).

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. 12). 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).

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