Smile rejuvenation with Biosmart restoratives

Dr. Hussein Naama
Alghadeer Center, Iraq

Introduction

Dentists today are spoilt for choice with a variety of direct and indirect treatment options for aesthetic restorations in the anterior zone. We are often challenged to create restorations that mimic natural teeth or enhance smiles to meet patient desires and expectations. I have recently adopted the Minimal Invasive Cosmetic Dentistry (MICD) concept introduced by Dr. Soo-Hil Koital which is based on a holistic patient-centric treatment approach that integrates minimally invasive treatment techniques with aesthetic dentistry to enhance the smile while taking into consideration the psychology, health, function and aesthetics of the patient.

Diastema or space between the teeth is a common dental condition that can create cosmetic issues in adults and often corrected with orthodontic treatment or indirect veneers. The clinical case below highlights a different treatment approach where direct aesthetic restorations were selected after assessing the treatment approach where direct aesthetic restorations were selected after assessing the following 5 factors which we take into consideration when treatment planning in my practice: 1. Treatment longevity; 2. Cost estimation; 3. Vitality of the tooth; 4. Biological cost; 5. Ex- treatment when planning my practice: 1. Treatment longevity; 2. Cost estimation; 3. Vitality of the tooth; 4. Biological cost; 5. Ex-

Patient Case

A 28 years old female patient visited our clinic requesting for a beautiful smile with less tooth destruction at a reasonable cost as the gap between her front teeth had affected her confidence to smile for a long time (Fig. 1). Other dentists had suggested orthodontic treatment or indirect veneers. After careful examination the following materials and Composite shades were selected:

- Composite materials
  - Palatal Shell - Beautifil II Enamel shade T
  - First Dentin layer - Beautifil II Enamel shade A2O
  - Second Dentin layer - Beautifil II Enamel shade A2
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  - Second Dentin layer - Beautifil II Enamel shade A2
  - Enamel Layer - Beautifil II Enamel shade HVT (High Value Translucent)

Restorative Approach

Direct Mock-up and Shade Selection

Composite mock-up can be used as an aid in both diagnostic and aesthetic evaluation. In this instance a preplanned mock-up technique was selected with the aim of reorienting the patient, evaluation of patient expectations by directly checking the smile design and to create the silicone index for fabrication of the palatal shell in the final restorations (Fig. 3). During the direct mock-up, composite material was added to the distal side of the left lateral incisor tooth to enhance the overall appearance while preserving tooth structure as per the MICD approach (Fig. 4).

Clinical Tip: It is important to check occlusion and identify the high points using articulating paper to ensure that an accurate silicone index can be created for the palatal shell (Fig. 5).

There are many different methods used for shade selection to achieve an accurate shade match with the natural tooth. In my practice, we prefer to use the direct technique for shade selection, where the enamel and dentin shades of composite materials are placed directly on the tooth surface and compared with the shade of the natural tooth. Shade selection procedure is completed with digital photography taking into consideration the 3 dimensions of color with ‘Hue, Value and Chroma’ (Fig. 6). A composite recipe is identified for build-up of each restoration.

Materials Used

After careful examination the following materials and Composite shades were selected:

- Tooth preparation
  - Fine Diamond points (Red band on the shank) and Super Snap Violet Disk
- Bonding - 37% Phosphoric acid and FL-Bond II
- Composite materials
  - Palatal Shell - Beautifil II Enamel shade T
  - First Dentin layer - Beautifil II Enamel shade A2O
  - Second Dentin layer - Beautifil II Enamel shade A2
  - Enamel Layer - Beautifil II Enamel shade HVT (High Value Translucent)
- Finishing & Polishing - Fine Diamond Points, Super Snap X-treme Kit
- Super Polishing for high gloss - Direct Delta polishing paste with buff disk

To achieve predictable aesthetic outcomes when opting for diastema closure and smile rejuvenation with direct restorations, it is very important to understand the optical characteristics and properties of the composite material being used. For this clinical case I have used a BEAUTIFIL II LS active, low shrinkage composite resin with life-like aesthetics and high polishability to mimic nature with long-term predictability (Fig. 6). After careful examination the following materials and Composite shades were selected:

- Enamel Layer - Beautifil II Enamel shade HVT (High Value Translucent)

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Tooth Preparation -
Rubber dam was placed from premolar to pre-
molar to help isolate the teeth to enhance vis-
ibility and eliminate contamination with sul-
cular fluid. The labial enamel surface of both
central incisors were minimally prepared us-
ing Super-Snap Violet disk so seamlessly blend
the restoration margins on both labial and pal-
atual sides. (Fig 7). Before proceeding with the
adhesive step, it was important to protect the
restoration margins on both labial and pal-

Composite Build-up
After adhesive etching of the restorative en-
amel surface with Phosphoric acid (Fig 8), FL Bond
II, a 6th generation 2-step adhesive system was
selected. First the Primer was applied, left for
10 seconds and air-dried, followed by the ap-
lication of bonding agent which was light cured
for 10 seconds. (Fig 9). The palatal shell was
created with the silicone index using Beautifil
II Enamel shade T. Beautifil II LS opaque shade
A2O was placed on the incisal edge to achieve
a natural halo effect for enhanced aesthetics. (Fig
10,11)

Clinical Tip: Palatal shells technique helps to
prevent over build-up of composite on the
palatal surface resulting in efficient finishing
and polishing of the final restoration.

Diastema closure between central incisors was
completed using the naturanomeric lay-
ering technique with incremental build up and
10 second light cure. The dentin layer was
created using Beautifil II A2 followed by Beaut-
ifil II enamel high value translucent shade
HVT. (Fig 11). For the incisal surface build-up,
the thinner layer of Beautifil II LS shade A2 was
used followed by Beautifil II enamel shade
HVT. (Fig 12). The restored central incisors af-
ter composite build-up demonstrated that
life like aesthetics had been achieved success-
fully. (Fig 13).

Clinical Tip: Spend time to achieve the accurate
shade match and tooth anatomy during the
composite build-up phase to save chair time

Finishing and Polishing Protocol
Selection of the right tools for finishing and
polishing of direct composite restorations to a
high gloss, still remain a challenge for many
clinicians. It is always helpful to identify a pre-
dictable finishing and polishing protocol for
your composite material, that would help to
achieve the desired final surface lustre while
saving valuable chair time. For this case, after
final light-cure and rubber dam removal, the
gross finishing was done using a Fine Dia-
mond point (Red band on the shank) at very
low speed with no water to smoothen the re-
storative surface.(Fig. 14). The mesial line an-
gles and macro anatomy was marked using a
lead pencil. (Fig 15) The anatomical contouring of
line angles and labial grooves were com-
pleted using a tapered fissure Fine Diamond
Point (Red band on the shank) with intermit-
tent water spray (Fig 16, 17). Dura Green stone
was used to smoothen the labial grooves. (Fig
16) Polishing of the restoration was completed
using Super-Snap X-Treme Green and then
Red Disks. The restoration was super-polished
to high gloss natural enamel-like lustre with
DirectDia diamond polishing paste and a buff-
disk. (Fig 19)

Conclusion
The above clinical case illustrates that optimal
life-like restorations can be achieved using fi-
oSMART composite material with predictable
aesthetics and function. By adopting the Mini-

mally Invasive Cosmetic Dentistry (MICD) con-
cept and treatment protocols, we have been
able to provide patients with direct restorative
treatment options that exceed their expecta-
tions while preserving natural tooth structure.
The inclusion of Beautifil II LS and Beautifil II
Enamel range of composites with a predictable
finishing and polishing protocol has helped to
minimize antimicrobial and meet patient’s
aesthetic demands more efficiently in my daily
clinical practice. (Fig 20,21) ▉

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