Small change, big smile: diastema closure with direct composite

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Midline diastema, the gap between the upper central incisors, is often perceived as aesthetically distinct, often making patients feel self-conscious. Additionally, it can also affect function, such as speech and occlusion. Various treatments, including orthodontic, restorative, or multidisciplinary, are available, with the best option depending on several factors. Direct composites are a popular treatment approach, favored by many patients for their same-day application, non-invasive nature, and reasonable cost.

The following case report presents the closure of diastema using a freehand composite technique.

A 21-year-old patient visited the practice with the desire to close the central diastema (Fig. 1). After the diagnostic recordings and treatment planning, it was jointly decided to close all diastemas in the front. At the same time, the existing Class IV fillings on the central incisors would be replaced and the fractured incisal edges would be harmonised.

After individual shade selection, Junior Enamel/JE and CORE A1 (G-ænial A'CHORD, GC) were selected for the enamel and dentine replacement, respectively. An Opalesent Modifier/OM (Essentia, GC) was added to the selection to emphasize the incisal translucence (Fig. 2).

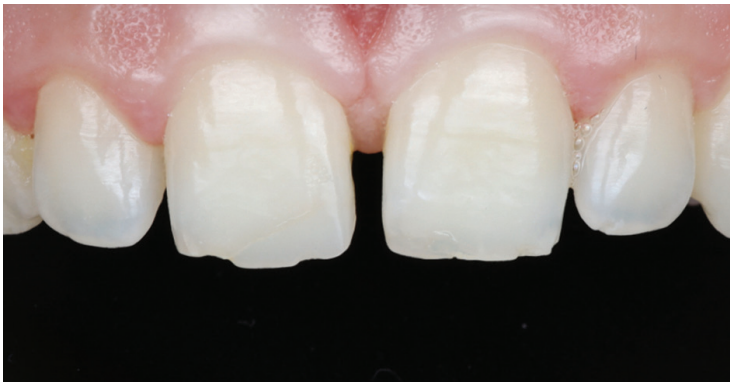

Fig. 1: Initial situation, showing an arch length discrepancy with diastema between the maxillary frontal teeth.

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Fig. 2: Shades were based on individual shade selection: A1 for dentine (G-ænial A'CHORD, GC), JE for enamel (G-ænial A'CHORD), OM for the incisal edge (Essentia, GC).

Fig. 3: After isolation with rubber dam.

Fig. 4: A silicone key was made and slightly adjusted for the creation of the palatal shell.

After isolation and retraction with rubber dam in the upper jaw of the entire front up to the second premolars, the central incisors were retracted with floss ligatures (Fig. 3). The teeth were cleaned, the existing anterior restorations were removed and the incisal edges were slightly beveled. To promote adhesion, the bonding surfaces were sandblasted with 29-µm Al2O3 particles (Aquacare, Velopex). This was followed by phosphoric acid etching of the enamel, primer and adhesive application (G2-BOND Universal, GC).

Prior to treatment, a silicone key was made directly in the mouth and slightly adjusted (Fig. 4). This was used to build the palatal shell with shade JE as the enamel replacement (Fig. 5). Thereafter, the mamelons were created with CORE A1. With a small amount of the OM (Opalescent Modifier) on the incisal edge, the natural halo effect could be recreated. JE was then again used as the final layer.

Now that the original improved tooth shape had been restored, the diastema could be closed using the 'Incisal First' technique recommended by Agnė Mališauskienė. By first determining the location of the incisal edge before placing the matrices for diastema closure (Fig. 6), greater control over symmetry and final dimensions and shape is achieved. For this purpose, CORE A1 shade was used for the palatal half and a small amount of JE was used as the

Fig. 5: Creation of the palatal shell with JE (Junior Enamel) shade. Note that the diastema is not closed yet in this stage, but the incisal edge is already slightly extended.

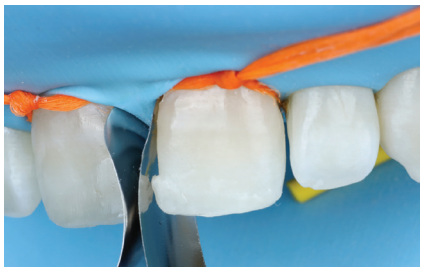

Fig. 6: The dimensions of the incisal edge are determined first.

Fig. 7: The line angles (blue) and grooves (red) were marked with a pencil prior to finishing.

Fig. 8: Result after diastema closure with nicely proportioned teeth.

Figs. 9-10: Before (top) and after (bottom) the diastema closure. The teeth are nicely proportioned, contributing to the aesthetics of the smile.

enamel substitute for the vestibular completion. The same composite and techniques were used to restore the lateral incisors. The line angles (blue) and mamelons (red) were marked with a pencil as a visual aid during the refinement of the shape and texture of the restorations (Fig. 7). Finally, the restorations were polished to high gloss. The resulting teeth were well-proportioned without the need to resort to laboratory techniques (Figs. 8-10).

Dentists encounter daily challenges with free-hand restorations, as patients frequently request same-day treatments as a fast yet reliable solution. In addition to mastering volume, layering and texture, the harmonious combination of restorative technique and material is essential to achieve an optimal aesthetic and functional outcome.

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