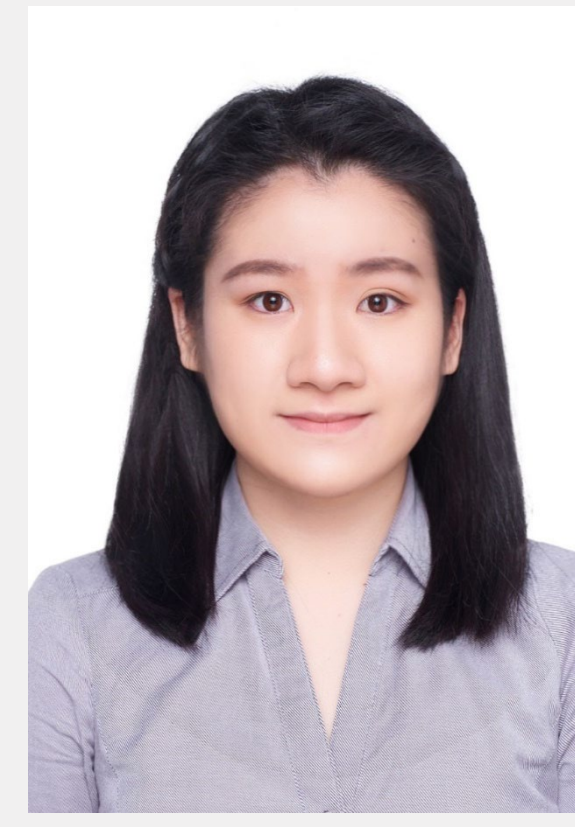


Global Clinical Case Contest 2022-2023



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Introduction to the case

A 20-year-old female patient came to our department with a chief complaint of compromised esthetics of her upper left central incisor. It was fractured in an incident and was restored approximately 8 years ago. Clinical evaluation revealed the tooth was vital without any symptoms. A carious lesion on the mesial side of the right central incisor was also noted. After discussing with the patient, as she preferred minimally invasive treatment, direct composite restoration was selected for aesthetic rehabilitation.



Pre-operative view of previously restored tooth 21 with poor morphology and marginal staining, along with enamel chipping on the mesial side of tooth 11.



Post-operative view of the reconstructed tooth 11 and 21 at one week follow-up.

Treatment steps



Diagnostic wax-up and Silicone index

A diagnostic wax-up of the fractured tooth was made to serve as a guide for silicone index fabrication using **Aquasil® Soft Putty** and **Light Body**.



Shade selection

Color matching was performed by placing and curing **Spectrum® TPH3** composite buttons prior to rubber dam isolation. The enamel shade (A1) and dentine shade (A3.5) were determined.



Cavity preparation and Caries removal

After isolating the maxillary anterior teeth with rubber dam, previous restoration and caries were removed. A 2mm bevel was also placed on tooth 21.



Adhesive sequence

The cavities were etched with **Detrey Conditioner 36®**, 30s on enamel and 15s on dentine, followed by **Prime&Bond®** application according to the recommended protocol.



Cavity restoration and Palatal shell fabrication

Tooth 11 was restored using **Spectrum® TPH3 A1** composite. Palatal shell of tooth 21 was built with the same shade using the pre-fabricated silicone index and **Palodent® V3** system.



Multilaminar layering

Spectrum® TPH3 A3.5 sculpted into the shape of mamelons was utilized to resemble the dentin body. **IPS Empress® Trans Opal** and **Direct Color** were used to recreate characteristics of the natural tooth, before placing a final layer of A1 to complete the build-up.



Tooth morphology refinement

Primary and secondary anatomical structures were marked with pencil before contouring and texturizing with fine diamond bur.



Final result

Post-operative view of the restorations showing satisfying results. Polishing with **Enhance PoGo®** polishers and **Prisma-gloss®** were employed to obtain vivid surface texture.

Material and Method

A wax-up diagnostic cast correcting the original tooth alignment was made in preparation for silicone index fabrication using **Aquasil Soft Putty®** and **Light Body** (Fig. 1). Shade selection was performed using **Dentsply composite buttons** (Fig. 2). During cavity preparation, a 2mm bevel was prepared along the fracture margin for better material blending and integration (Fig. 3). The adhesive procedure was performed using **DeTrey Conditioner 36®** and **Prime&Bond®** (Fig. 4). A sub-micron hybrid composite (**Spectrum® TPH3**) in **A1** was used to restore the cavity and to create the palatal shell from the silicone index (Fig. 5). An **A3.5** mass was used to simulate the color-saturated dentin before layering opalescent resin, tint, and a final **A1** layer to disguise the restoration margin (Fig. 6). Finally, finishing and polishing was performed using **Enhance PoGo®** system and **Prisma-gloss®** to obtain a high luster (Fig. 7,8).

Discussion and Conclusion

This case report demonstrates the reconstruction of upper central incisors with direct adhesive restorative materials. The **Spectrum® TPH3** sub-micron hybrid resin exhibit excellent handling properties and provide superior aesthetic results. Current advancements in dental materials gives us a chance to reproduce restorations that mimic the shape, texture, and color of natural tooth, while having the benefit of being long-lasting, conservative and low-costing. Though layering technique requires the understanding of material properties and great accuracy, the resultant satisfactory smile of a young patient is simply priceless.