Clinical

Quick, aesthetic diastema closure

Dr Nadeem Younis describes a minimally invasive technique using direct resin composite restorations

The demand for aesthetic dentistry is increasing, as patients become more aware of the range of techniques available. Minimally invasive treatment should be the preferred choice where possible, taking the long-term prognosis of the restoration into consideration.

Significant advances in resin composites have been made in recent years. Due to the improved physical and optical properties of these materials, it is possible to provide restorations for large defects that are both aesthetic and mechanically stable. This case report describes the use of direct veneers to improve a patient's confidence by enhancing her smile.

Initial diagnosis and treatment planning

A female patient in her late 30s presented to Bridge Dental Practice as she was unhappy with the appearance of her teeth (Figure 1). Her main issue was a large midline diastema, with disproportionate crown width-to-length ratios for her central incisors (Figure 2a). She also had a missing upper right lateral incisor (UR2) and a diminutive upper left lateral incisor (UL2) (Figure 2b).

The patient wanted a 'quick-fix' solution. Comprehensive or short-term orthodontics, followed by restorative dentistry, would take too long. She preferred the option of minimally invasive treatment, using composites to improve the shape of her upper anterior teeth. A wax-up was made to show the patient the projected outcome, and she was happy to go ahead.

Composite and shade selection

I chose Heraeus Kulzer Venus Pearl for this case, as the material can be used in a multi-layering technique, to create a natural-looking restoration. The translucency of the adjacent teeth can be mimicked by applying a thick, opaque dentine layer in conjunction with a thin coat of an enamel shade at the incisal edges. Venus Pearl is a nano-hybrid, based on a tricyclodecane-urethane monomer. Consequently, it has low polymerisation shrinkage and its polishability is excellent.

Appropriate shades were selected by using small temporary composite additions. Increments of 1mm of various enamel and dentine shades were placed on the tooth surface, and light cured (Figure 3). The composite and the tooth were then allowed to rehydrate for a couple of minutes. Opaque Light Chromatic (OLC) and A1 shades were chosen.

Figure 1: A female patient was unhappy with the appearance of her teeth

Figure 2a: Her main issue was a large midline diastema, with disproportionate crown width-to-length ratios for her central incisors

Figure 2b: She had a missing UR2 and a diminutive UL2

Figure 3: Appropriate shades were selected by placing 1mm increments of various enamel and dentine shades on the tooth surface

Figure 4: Ibond Total Etch adhesive was applied and light cured

Figure 5: A silicone indexed of the wax-up was utilised to build the palatal walls of the central incisors with 0.5mm increments of A1 enamel shade

Figure 6: The approximal walls of the central incisors were formed with clear matrix strips

Figure 7: The shape of the UL2 was adapted by adding A1 enamel

Figure 8: The transitional line angles were marked on the anterior teeth and the primary anatomy was modified with fine diamond burs

Figure 9a: The final lustre was achieved using the Venus Supra polishing kit

Figure 9b: The colour of the restorations integrated well with the adjacent teeth and the compatibility of Venus Pearl to the cervical gingiva was very favourable

Simplified incremental layering technique

A coarse diamond bur was used to roughen the enamel mesially and to remove the aprismatic enamel layer. This was then etched for 15-20 seconds, to allow for a homogeneous etch pattern. Ibond Total Etch adhesive was applied and light cured (Figure 4).

A silicone index of the wax-up was utilised to build the palatal walls of the central incisors with 0.5mm increments of A1 enamel shade (Figure 5). A double retraction cord technique was employed to push the gingiva away from the teeth and compress it mesially. This created a natural emergence profile and enabled the composite to adapt well to the cervical tooth surface. The approximal walls of the central incisors were formed with clear matrix strips (Figure 6).

Once the boundaries of the restoration had been identified, OLC resin composite was used to build the bulk of the dentine and to define the incisal edge patterns. This was overlaid with a 0.5mm layer of translucent A1 enamel.

The upper right canine (UR3) was converted into a lateral incisor by adding a mesial transitional line angle with OLC and A1 composites. The shape of the upper left lateral incisor (UL2) was adapted by adding A1 enamel (Figure 7).

Finishing and polishing

The transitional line angles were marked on the anterior teeth and the primary anatomy was modified with fine diamond burs (Figure 8). The approximal surfaces were adjusted and polished with Epitex tape. Excess 'flash' of composite or the bonding agent was removed with a number 12 scalpel around the mesial gingival embrasures of the central incisors. The final lustre was achieved using the Venus Supra polishing kit (Figure 9a).

The patient was recalled after two weeks for final adjustments. This was to ensure that the diastema closure did not impinge on the labial fraenum, which could result in inflammation of the soft tissues.

Biocompatibility and aesthetic outcome

The colour of the restorations integrated well with the adjacent teeth and the compatibility of Venus Pearl to the cervical gingiva was very favourable (Figure 9b). The patient was incredibly pleased with the aesthetic outcome, and her new smile has considerably improved her confidence (Figure 10).

Figure 10: The patient was incredibly pleased with the aesthetic outcome and her new smile has considerably improved her confidence

Dr Nadeem Younis has a special interest in aesthetic and orthodontic dentistry. He runs hands-on composite courses for general dental practitioners and accepts case referrals. Dr Younis is a full member of the British Academy of Aesthetic Dentistry and is a partner in Bridge Dental Practice, Burnley. He qualified from Sheffield University in 1993.

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