

CLINICAL

Invisible restoration of fractured tooth

Gurvinder Bhirth outlines a case mimicking the natural dentition

A teenage male patient presented having fallen and fractured his upper right first incisor (Figures 1 and 2). There was no other damage to his teeth and he was dentally healthy.

As the fracture was not large, there were only two treatment options. Either smooth the damaged incisal edge and leave the tooth unrestored, or replace the missing fragment with composite. After discussion with the patient and his mother, it was decided to repair the tooth with a direct restoration, mimicking the natural dentition.

I chose Heraeus Kulzer Venus Pearl because it was perfect for this case. The opacity of the dentine shade allowed me to restore the tooth without the use of opaquers, being confident that there would be no 'greying out'. The handling is easy and it does not stick to instruments. I am pleased with the high quality polishability of the material.

Treatment process

At the initial appointment the tooth was treated with an immediate dentine sealing. A wax-up was made, which was used to mould a putty matrix from Heraeus Kulzer Provil. A cross-polarised image was also taken to show the internal details without specular reflection (Figure 3). This helped to accurately assess the colour of the dentine, any white intensives and the natural halo.

The treatment began with isolation of the upper incisors with rubber dam. A bevel was prepared using a fine diamond bur, then smoothed and polished with discs (Figure 4). Small amounts of Venus Pearl A1 and A2 shades were placed on the adjacent tooth for control. The putty matrix was then tried in (Figure 5). The tooth was bonded with a two-stage primer and bond, then light cured (Figure 6).

The build-up started with the construction of a palatal shelf of less than 0.4mm thickness using Venus Pearl CL shade (Figure 7). The mamelons were created with the OLC shade, leaving space for the translucent shade (Figure 8). Halo enhancement was achieved with OMC shade (Figure 9). A layer of CL shade was then placed between the halo and mamelons, followed by Venus Color White stain (Figure 10). This was then overlaid with CL shade, then finally shade A1 (Figure 11).

Venus Pearl includes super-fine nano-hybrid filler particles. This provides even more natural light refraction and supreme aesthetic appearance, combined with creamy handling properties. Compared with earlier composite restoratives, the cured material is more flexible under stress and more durable over time. Throughout curing, more of the monomer is polymerised, leading to higher fracture toughness and greater flexural strength.

Finishing

Initial finishing was carried out using fine diamond burs and discs (Figure 12). Final polishing was completed one



Figure 1: Initial situation showing extent of fracture



Figure 2: A contrasted view to highlight incisal edge details



Figure 3: A cross-polarised image was also taken to show the internal details without specular reflection



Figure 4: The bevels were prepared using a fine diamond bur, then smoothed and polished with discs

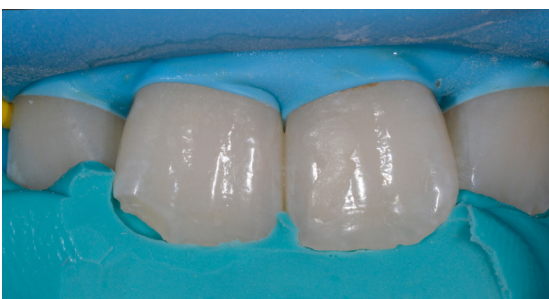


Figure 5: A Provil putty matrix was tried in



Figure 6: The tooth was bonded with a two-stage primer and bond, then light cured



Figure 7: The build-up started with the construction of a palatal shelf of less than 0.4mm thickness using Venus Pearl CL shade



Figure 8: The mamelons were created with the OLC shade, leaving space for the translucent shade



Figure 9: Halo enhancement was achieved with OMC shade



Figure 10: A layer of CL shade was then placed between halo and mamelons, followed by Venus Color White stain



Gurvinder Bhirth BDS works in a periodontal and implant referral practice in Birmingham offering a wide range of dental treatments. He has an interest in minimal intervention dentistry, particularly direct composite restorations. His work with composites won him a place on the Composite Masters course held by the Style Italiano group in Pisa.

Since qualifying from Liverpool University in 1997, he has worked in a number of NHS and private practices, both in the UK and Australia.

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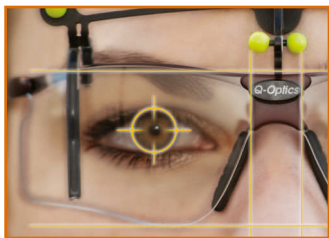
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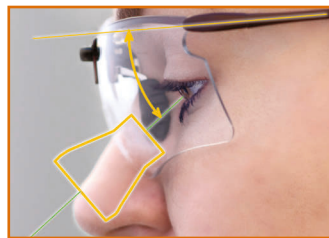
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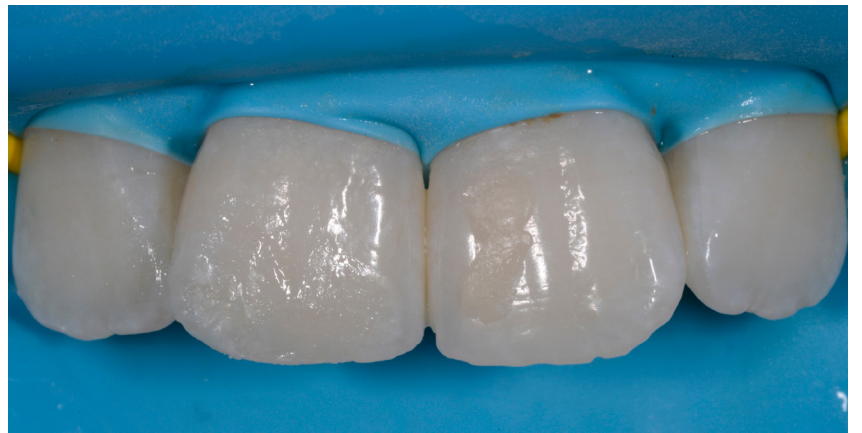


Figure 11: The white stain was then overlaid with CL shade, then finally shade A1



Figure 12: Initial finishing was carried out using fine diamond burs and discs



Figure 13: Final polishing was completed one week later, with diamond paste, discs and a felt wheel

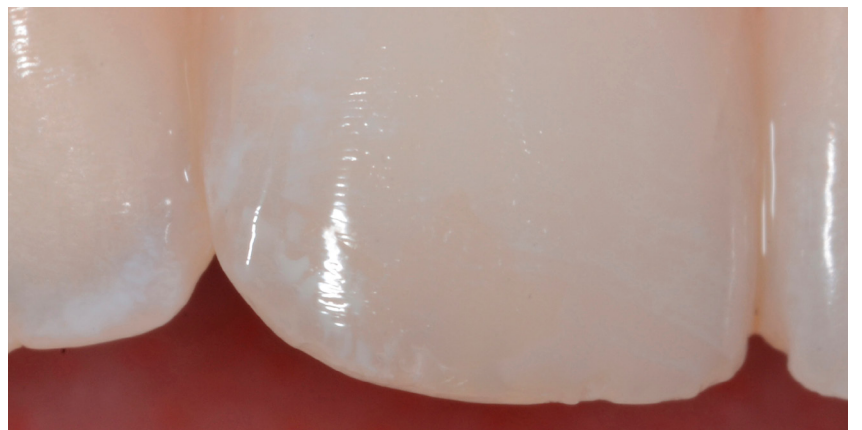


Figure 14: Close up shows the full integration of the restoration, replicating the intricate tertiary anatomy and internal details

week later, with diamond paste, discs and a felt wheel (Figure 13). The end result was a strong, natural-looking restoration that blended with the tooth.

The final close up image shows the full integration of the restoration, replicating the intricate tertiary anatomy and internal details (Figure 14). The patient was delighted, as he could not see where the tooth had fractured and he was able to smile with confidence. **ID**