

Clinical Case Spotlight

Biomimetic Management of Dental Trauma

Dr. Jason Smithson (UK)
BDS, Dip.Rest.Dent RCS (Eng)



Introduction

A 19-year-old male patient attended with traumatic injuries to teeth 13, 12 and 11. All three teeth had Ellis Class 2 dentine-enamel fractures with no pulpal involvement. The teeth all tested vital to electronic and thermal stimulation, there were no root or alveolar fractures. The teeth were not mobile.

Scans were taken and a digital mock-up, 3D printed models and palatal stent fabricated. The teeth were restored with direct composite resin using Kulzer's Venus Pearl.



Before



After



01 Pre-op view with lips at rest showing significant incisor display.



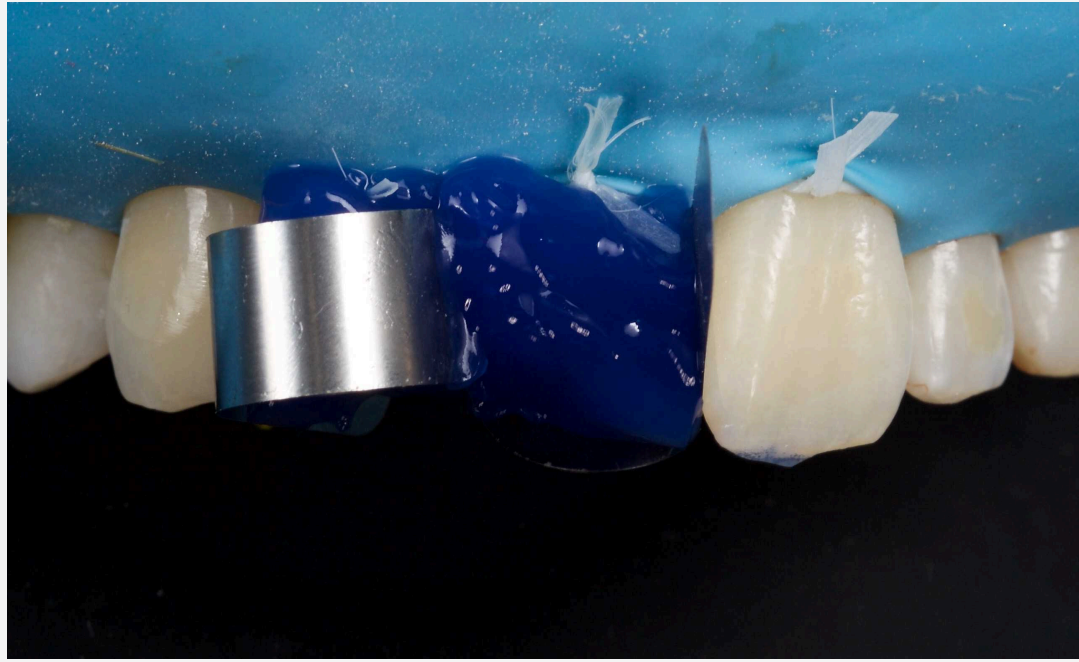
02 Pre-op view of full smile.



03 Pre-op retracted view showing significant loss of tooth structure 13, 12 and 11: the contralateral teeth were triangular rounded in shape with significant surface texture. Blue-orange opalescent effects were visible in the incisal third.



04 The teeth were anaesthetised and isolated with rubber dam and floss ties. A 2mm infinity bevel was placed on the facial surface after particle abrasion with 29-micron alumina at 2-3 bar pressure.



05 Total etching was carried out with 37% phosphoric acid followed by rinsing, drying and application of Kulzer's iBOND Universal adhesive resin.



06 The teeth were separated with a Tofflemire Band during the bonding phases.



07 Palatal shells were built to a 0.3mm thickness with the palatal stent and Venus Pearl CL (Clear Light) shade.



08 Venus Pearl OLC (Opaque Light Chromatic) shade was placed to replace the dentine and increase the value of the restorations.



09 Venus Pearl A2 was placed to cover the OLC and improve the vitality of the restorations. CO (Clear Opal) shade was used to recreate opalescence in the incisal 2mm.



10 The incisal third effects were covered with a very thin layer of Venus Pearl CL.



11 Rubber dam was removed and a primary polish with appropriate line angles was achieved.



12 A lateral view shows final surface texture and opalescence effects.

Highlights

- Consider a mock-up and palatal stent to control resin thicknesses during complex layering.
- Venus Pearl opaque shades (OLC/OMC/ODC/OXDC/OB) can be used when dentine has been lost to block light transmission and reduce greying.
- Venus Pearl CO shade can be employed in the incisal third to recreate blue-grey opalescence.

Conclusion

This case demonstrates that fractured teeth can be restored to high level aesthetics in one visit with minimal preparation of tooth structure using direct composite resin.

