The return of the inlay/onlay?

I have attended, recently, a number of overseas conferences and, as happens to all of us at such meetings, there was an opportunity to discuss a variety of clinical topics with delegates. One topic was the ideal treatment for the tooth (a premolar, perhaps) which has a fractured cusp. In my days as a dental student, the UL4 illustrated in Figure 1 would have been built up with a pin-retained core (amalgam in those days!) and then a crown preparation would have been carried out, in effect removing most of the remaining coronal tooth substance. Does that make sense in 2012? I would suggest not. Adhesive technology has advanced to such a degree that a cusp-replacement resin composite restoration could be expected to have a reasonable chance of success, with the bond not being stressed (remember the Configuration Factor?). An indirect cusp replacement ceramic restoration might also be considered appropriate (Figure 1), as discussed by van Dijken and colleagues. This has the advantage of not thinning the small amount of remaining tooth substance. Van Dijken called such restorations extensive dentine/enamel bonded ceramic coverages, perhaps the most appropriate name, but a bit of a mouthful. He and his colleagues followed up 182 such restorations for 5 years, with 13 (7%) of these large restorations being classed as non-acceptable, surely an excellent result for such large restorations? Only one tooth in the study required a root canal treatment, again an excellent statistic in view of the extent of the restorations. Perhaps the secret for success is not so surprising, given the fact that the preparations required little additional removal of tooth substance. In this regard, inlays and onlays have been considered to be easier to do than a crown and are no more expensive than crowns or root canal treatments. Perhaps the name inlay/onlay is inappropriate, but the need to conserve residual tooth substance is the most appropriate objective. Direct-placement composite may also be appropriate (Figure 2), perhaps more technique sensitive for the operator, but cheaper for the patient. It should be added, however, that the situation may be slightly different in the non-vital tooth, in which the need to cover residual tooth substance in order to prevent its fracture perhaps overrides the tooth preservation principles suggested above. The time for the inlay/onlay, or large ceramic coverage restoration, as opposed to a crown, is at hand.

References

Figure 1. Large cusp replacement ceramic restorations at UL4, UL6 after 5 years.

Figure 2. Composite used to replace fractured buccal cusp of UR5 in a 74-year-old patient. Crowning a tooth like this will result in the removal of almost all of the remaining tooth substance.