This article describes the clinical stages involved in restoring class II cavities with composite resin, utilising the bulk filling technique. This alternative to traditional layering methods has gained popularity due to increased efficiency, while managing the volumetric shrinkage associated with curing large volumes of composite resin.

**STEP 1** Pre-operative assessment of the extent of the lesion to be restored. The shape and form of the existing restorations have not recreated ideal proximal contacts between adjacent teeth. A preoperative radiograph is useful here in predicting the depth of the carious lesion. The existing occlusal contacts should be assessed at this stage - aiming to maintain the existing occlusal contacts on tooth structure following restoration.

**STEP 2** Anaesthesia and rubber dam application with clamp placement ideally on the tooth distal to the tooth being restored, with isolation extending to the tooth anterior to the tooth being restored also (Figure 1).

**STEP 3** Removal of the existing restoration with any secondary caries present. This step should be carried out under copious water irrigation with high volume suction to minimise mercury vapour generated. The adjacent teeth should be protected as required (Figure 2).

**STEP 4** Careful assessment of sound tooth structure with a clear amelodentinal junction and liner application as required (Figures 3 and 4).

**STEP 5** Ensure a dry field for bonding. If there is any bleeding at this stage, it is important to ensure haemostasis before proceeding. This should be easily achieved with either a haemostatic agent or supplementary intrapapillary infiltration of local anaesthetic for the vasoconstrictive...
Clinical feature

STEP 1. Etching of the enamel (Figure 5) and dentine (Figure 6) with 37% phosphoric acid for 10-30 seconds. Appraisal of etching - a favourable etching pattern (frosted appearance) is illustrated in Figures 7 and 8.

STEP 2. Careful matrix and wedge placement (Figures 9 and 10). A matrix system designed to restore the proximal contact adequately, as well as maintaining a tight marginal seal will offer a better result over traditional ring type designs. If the cavity extends beyond the proximal box, it may be advisable to build up most of the tooth with a traditional matrix system, then using a specialised matrix system for the proximal box.

STEP 3. Application of adhesive resin (Figure 11).

STEP 4. Placement of flowable bulk fill composite at the base of the box area can enhance adaptation due to the superior “wetting” capacity of this material (Figure 12). The depth of each layer of bulk fill should not be greater than 4mm to ensure adequate penetration of the curing light and therefore complete polymerisation of the material (Figure 13). Although the volumetric shrinkage for bulk fill composites (1.6-2.4%) is less than for packable composites (2-3%), if they are utilised in greater bulk than for traditional composites, the shrinkage overall will be increased proportionally. It is also recommended to further light cure on all surfaces following matrix removal. A capping layer of packable hybrid composite is placed on the occlusal surface (Figure 14).

STEP 5. Finishing and polishing (Figures 15 and 16) should be...
completed using fine grit diamond burs. The main aim of this step is to ensure the composite is smooth and flush with the adjacent tooth structure as well as recreating ideal dental anatomy as much as possible (Figures 17 and 18).

**STEP 1** Rubber dam removal.

**STEP 2** Checking and adjustment of the occlusion as required (Figures 19 and 20). Occlusal contacts should be kept on sound tooth structure in preference to the restorative material. Occlusal contacts should be maintained as preoperatively on the adjacent teeth.

**STEP 3** Final polishing is completed with grit impregnated discs and silicone points.

**Concluding remarks**

Patient-driven demand for aesthetic restorations has increased in recent years. As clinicians, we have a responsibility to advise patients regarding the suitability of composite resin on a case-by-case basis. Factors influencing the suitability of the material include: size of the cavity and ability to achieve adequate moisture control. Achieving a predictable and durable result with composite resin is technique sensitive and challenges include restoring proximal contacts, polymerisation shrinkage, and ensuring adaptation of the material to the cavity. Restoration with composite resin remains more labour-intensive than amalgam. Bulk fill techniques are gaining popularity as clinical time required is reduced without compromising the quality of the result achieved.