Managing coronal destruction
A clinical case demonstrating the pre-endodontic reconstruction of a tooth

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For many years, post systems have been an important component of post-endodontic core build-ups. Post crowns or posts and cores used to be manufactured in a dental laboratory with the primary goals of repairing the restoration on significantly destroyed teeth and stabilising the tooth structure. With the development of adhesive systems, mechanical anchoring of the denture to the remaining tooth structure became increasingly less important, to such an extent that clinicians now debate whether a post is even needed.

Whether a tooth requires stabilisation must be critically questioned as well, particularly in view of the risk of fracture and its causes. In this regard, root fractures, vertical root fractures and crown fractures have to be assessed differently. The risk of a fracture of the crown increases with the size and depth of the cavity being prepared in the tooth (Fig.1).

A tooth with a mesial-occlusal-distal cavity (MOD) and an endodontic trepanation has a much higher risk of fracture than an undamaged tooth does. Vertical root fractures differ from fractures in the area of the crown. Lost endodontically treated teeth owing to a vertical fracture are often treated with a post. The difference in the elastic modulus between the hard tooth structure and...
The apical radiolucency should be 1–2 mm around the tooth. X-ray images showed a root filling up to approximately 3 mm before the radiological apex, as well as apical radiolucency (Fig. 1).

We diagnosed chronic apical periodontitis in tooth 12. The apical radiolucency should be subsequently observed and, if necessary, root canal treatment should be revised prior to placing a crown.

Being able to position a rubber dam clamp is a basic prerequisite for endodontic treatment and for pre-endodontic preparation. If a clamp cannot be positioned, surgical crown lengthening is indicated, if applicable (Fig. 6).

The retained root was cleaved of remaining tissue, caries and plaque. Then the optimal post diameter was determined using a stencil. A size of 1.5 mm was selected.

Since there was only a small amount of remaining tooth substance, the post cavity was prepared to a depth of 6 mm and thoroughly rinsed. The canal and remaining exposed dentine were conditioned with 55 % phosphoric acid for 15 seconds and then rinsed with a multifunctional syringe for 15 seconds (Fig. 7).

Excess fluid was suctioned off with a micro-suction device. The pre-bond was applied using an application tip and worked into the surface for 15 seconds. The micro-suction device was again utilised to remove any excess.

In order to prepare the bonding material, Bond A and B were mixed in equal portions for 5 seconds and massaged into the dentine surface for 15 seconds (Figs. 11 & 12). Then they were blown to a thin layer and light cured for 10 seconds. The tooth was built up with the dual-curing core build-up material LuxaCore Z-Dual (DMG Dental; Fig. 9) and the post cavity was filled with LuxaCore Z-Dual. The LuxaPost post (DMG Dental) was positioned and the material was light activated (Fig. 10).

The crown was built up in small increments, activated, and contoured and polished with diamond grinding tools (Figs. 11 & 12).