

# Systematic adhesive core build-up

**Ludwig Hermeler** examines the use of glass fibre post luting in post endodontic restoration.

As early as 1995, the study conducted by Ray & Trope confirmed the relevance of a good post endodontic restoration for the successful preservation of teeth where the root canals have been treated. In today's age of adhesive dentistry, considerable importance is awarded to preventing 'leakage' and accordingly the risk of reinfection of the canal system. The post endodontic, adhesive core build-up with simultaneous glass fibre post luting satisfies both these indispensable requirements for a certain long term prognosis of severely damaged teeth. Rebuilda Post System from Voco offers a user friendly concept in an optimally coordinated set featuring all the necessary components.

## Up to date post treatments

The consensus today is that a root post is used to retain the coronal build-up and consequently for creating sufficient retention. The degree of coronal dental hard tissue loss and the expected loads on the tooth determine the type of post endodontic treatment on a



Fig 1: X-ray taken prior to removal of telescopic tooth 44.

case by case basis. In cases of low to medium levels of destruction, treatment with a plastically processed composite without post-retained build-up is usually indicated. If the clinical crown displays severe substance loss, a post construction system should be employed to guarantee secure retention.

A dentine margin of no less than 2mm width is later prepared apical to the build-up in the so called 'ferrule design' in order to increase fracture resistance. Root canal posts affixed with adhesives allow consistently minimally invasive preservation of intact dental hard tissue, whereby retentive areas in the region of the build-up can also be used as additional retentive



Fig 2: Initial clinical situation following extraction of telescopic tooth 44 with already accordingly expanded partial prosthesis.



Fig 3: Healthy remaining substance of tooth 43 prior to adhesive build-up.



Fig 4: Preparation of post canal with the drills of the Rebuilda Post System.

surfaces.

In contrast to metal, zirconium and carbon posts, glass fibre reinforced composite root posts display biomechanical behaviour similar to that of dentine. Thanks to their dentine like elasticity, arising forces can be distributed over the surrounding tooth substance without the development of punctiform force peaks in the root as in the



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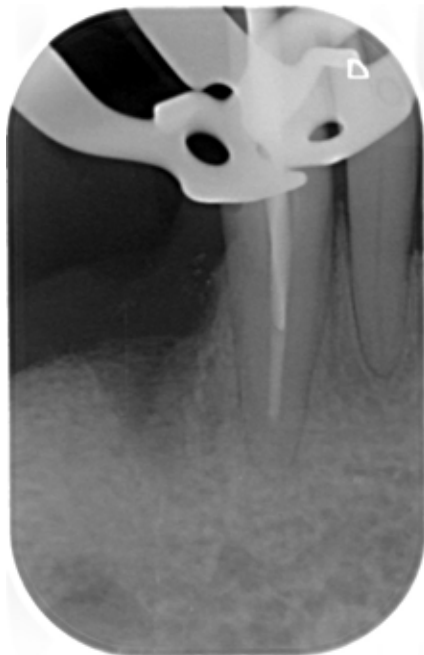


Fig 5: X-ray image for measurement with Rebilda Post drill (diameter 2mm).



Fig 6: Checking the position with the Rebilda Post glass fibre post.



Fig 7: Silanisation with Ceramic Bond (VOCO) for 60 seconds.

alternatives named above. The physiological distribution of the forces, to apical and coronal, of the total adhesive composite of glass fibre, build-up composite and preserved tooth substance reduces the risk of fractures.

### Clinical case

The patient is a 75 year old male. The telescopic tooth 44 (fig 1) was extracted and a curved clip placed on tooth 43 (fig 2) as an interim solution. Following adequate



Fig 8: Mixing of Futurabond DC with the Single Tim applicator in the SingleDose.



Fig 9: Rubbing in of the self-etch bond in the post hole with Endo Tim.



Fig 10: Introduction of composite Rebilda DC with the pliable application tip of the QuickMix syringe.



Fig 11: Introduced Rebilda Post post with excess composite forced out in the process.

healing of the wound, the terminal tooth 43 should be furnished with a telescopic crown and the existing restoration suitably reproduced on the right hand side. Tooth 43 is extensively filled on all sides and its loading as a terminal abutment tooth is not insignificant. Consequently, it is equipped with a glass fibre post for the fixation of the adhesive build-up. After application of a rubber dam, removal of the fillings and a check with Voco Caries Marker, it becomes evident that the remaining

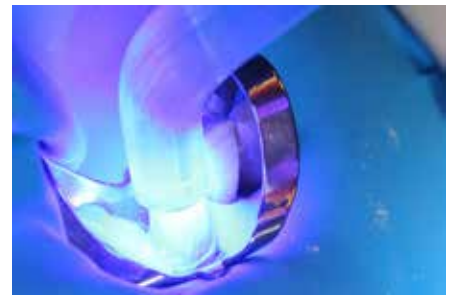


Fig 12: Fixation of the post via primary light curing for 40 seconds.

healthy substance requires an adhesive, preprosthetic restoration (fig 3).

Tooth 43 was treated with a root-canal filling in 2001, has been subjected to regular X-ray controls ever since and has not displayed any symptoms at all over the whole period. Following removal of the root-canal filling using a Gates-Glidden bur to achieve the planned depth, precision drilling is performed with the drill from the system corresponding to the respective post size (fig 4). The X-ray image for measurement is performed with the Rebilda Post drill with a diameter of 2mm (fig 5). The image displays the correct fit with apical preservation of the root-canal filling of approximately 5mm. Optimal drilling performance is ensured by intermediate cleaning of the canal and the drill by rinsing away dentine remnants.

The Rebilda Post is cleaned with alcohol before the trial insertion. During the position check in the mouth, the root post fills the canal precisely without becoming wedged (fig 6). The post is shortened to the required length extraorally using a fine-grain diamond (not forceps or scissors due to the risk of delamination). The glass fibre post is cleaned again with alcohol, dried, and silanised for 60 seconds with the Ceramic Bond included in the system (fig 7) before being dried with oil-free air again. Prior to the adhesive luting, the root canal is rinsed out with water and dried using paper points.

Futurabond DC is activated by pressing on the marked area of the SingleDose and then mixed by piercing the film and making



Fig 13: Finished, prepared tooth with Rebilda Post and Rebilda DC build-up.



Fig 15: Inserted telescopic crown tooth 43.

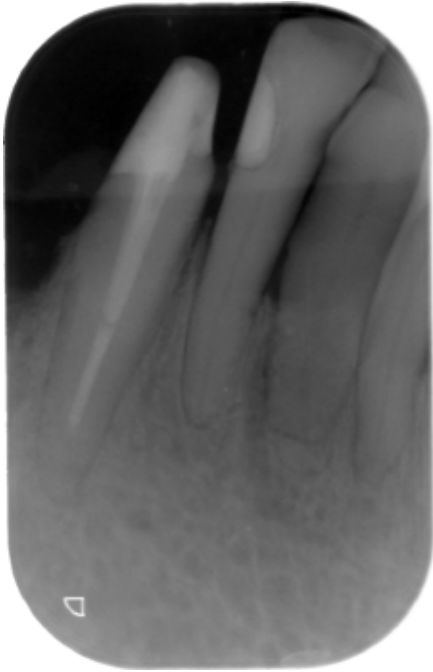


Fig 14: X-ray image of the homogeneous adhesive build-up block.



Fig 16: The restored telescopic restoration.

● Circular movements with the Single Tim (fig 8). The self-etch bond is rubbed into the canal with the fine Endo Tim (fig 9) and over the rest of the tooth surface with the Single Tim for 20 seconds, the solvent is dried with oil-free air for five seconds and any excess liquid in the channel is removed using paper points. A shiny bonding layer is created, which is not light-cured.

Rebilda DC is introduced directly into the root canal using the thin, pliable application tip of the QuickMix syringe (fig 10) starting apically and keeping the cannula tip emerged in the luting composite throughout the application. The Rebilda Post is inserted with a rotary movement, with small amounts of excess material being forced out in the process. Light curing is performed for 40 seconds to fix the post (fig 12) and then additional Rebilda DC layers are applied. The core build-up can then be light cured for a further 40 seconds per layer; the chemical curing takes five minutes.

Figure 13 shows the prepared tooth; the preparation employs the ferrule effect in order to stabilise the abutment tooth and the subsequent restoration. The high radiopacity of Rebilda Post impresses in the X-ray image and it is clear that the post and build-up composite form a homogeneous, adhesive build-up block (fig 14). The functionality of the telescopic restoration, expanded with the telescopic 43 and then rebased, and the familiar wearing comfort are restored for the patient (figs 15-16).