



The use of the LuxaCore and LuxaPost system in postendodontic dentistry - a case report

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Introduction

When a specific treatment plan includes crowns and/or bridges, prior reinforcement of the available dentition is often necessary in order to guarantee a reliable and lasting restoration and an adequately functioning prosthesis. It is always of paramount importance to make sure that the planned restoration will withstand the natural occlusal forces while feeling functional and comfortable in the patients' mouth.

In cases where the teeth are already or must be endodontically treated, root canal posts and core build-up material should be used. There are many material options that can be chosen for such cases.

To achieve the best restorations possible, one needs to demand certain physical property criteria of the materials employed.

For posts, it is important to choose something that can be easily and firmly placed into a prepared root canal, a post that has strength yet still remains sufficiently flexible to avoid root fractures, preferably fiber reinforced, and the post also needs to be radiopaque.

For a core build-up material, one must demand a material that is easy to mix and use, something that provides a dual cure option, a product that will sets hard but not be brittle and a material that will adhere thoroughly to both post and natural tooth substances alike. Material shading options are always an additional advantage. The best recommendation is to find a composite material specifically designed for the purposes of providing core build-ups. So it needs to provide dentin-like cutting properties and compressive strength during tooth cutting procedure. Fluoride releasing composite products provide a further option.

Material

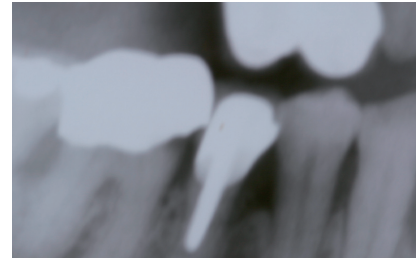
The teeth treated in the following report were treated using glass fiber posts in combination with LuxaCore-Dual (DMG), a dual-cure, automix composite core build-up material. In each case LuxaBond-Total Etch (DMG) was used as a reliable bonding agent.

LuxaCore-Dual can be automatically mixed, dispensed with Intraoral-tips, has ideal flow properties - allowing tooth substance and posts to be totally surrounded while avoiding gaps or air pockets -and is available in different shades (Blue to enhance visibility during shaping and trimming and tooth shades (white, A3) for use under porcelain prosthesis).

LuxaPosts has been used in the cases and provided a superior glass fiber reinforced post in a kit system which includes specially size-matched drills for each size of LuxaPost.

LuxaPosts also offer the advantage that they can be easily Silane-coated which greatly enhances the final results of adhesion in the canal as well as complete integration with the core build-up material used.

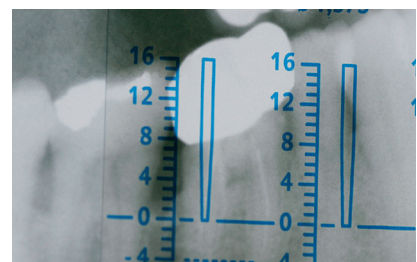
I found the above mentioned materials particularly advantageous because of their ease of use and their guaranteed integration when used together. The fact that LuxaCore-Dual not only possesses very similar strength, flexibility and insulation properties to that of dentine, but it also cuts and trims like dentine as well and is not too hard as many other core or general restorative composites tend to be.



01 Radiographic findings at baseline investigation



02 Cavity with root canal filling material in-situ



03 Length determination by means of an pre-operative x-ray



04 Preparing the root canal



05 Cleaning the cavity after canal preparation



For information only

The dual cure ability of LuxaCore-Dual guarantees a complete cure, even in undercut areas or areas which may not be penetrated by a curing light. That is also an advantage of LuxaBond-Total Etch. Besides the system includes a pre-bond for superior adhesion which is applied following prior etching of the enamel and dentine. The pre-bond ensures that LuxaBond-Total Etch hardens quickly on the tooth substance as soon as the bonding agent (mixture of components A and B) is applied. That leads to a solid anchor surface before the restorative material is applied.

The recent addition of LuxaPost, LuxaBond-Total Etch and Silane to DMG's core build-up materials is in my opinion a fine example of a complete, easy to use system.

Case presentation

The 50 year old male patient complaint mainly about a bad odor and discomfort on teeth 36 and 46. After clinical and radiological investigation a secondary root caries due to marginal inhomogenities of the existing were diagnosed. The patient was informed about the treatment options for this clinical findings. He was informed that the old insufficient crowns had to be removed and that there might be the necessity of an endodontic treatment. Following the endodontic treatment a core build-up will be placed in order to replace the missing tooth substance and to allow a stable core and preparation. After full healing of the endodontic and periodontal conditions a new crown will be fabricated and placed.

Picture 1 illustrates the baseline radiographic findings. Especially in the mesial marginal area an elucidation indicates a severe secondary caries development. The apical area shows a discreet elucidation at the mesial and distal apices.

The old crowns were removed and as stated before a root canal filling was performed. Picture 2 shows the cavity after the endodontic treatment with root canal filling material in situ. Prior to the placement of the glass fiber reinforced post the length was determined by means of a pre-operative x-ray. The diameter of the post to be used is determined by the size of the root canal (Picture 3).

The distal root canal was prepared using the size matching bur. In contrast to other systems, consisting of different burs (pre- and finishing burs), the use of the LuxaPost systems allows to do all the preparation steps with on bur. An elastic stop is used to control the working length while preparation (Picture 4). The cavity as well as the root canal will be cleaned and dried, removing all debris, using rinsing solution, paper points and a triple syringe (Picture 5).

Following a size and fit check of the post, the root canal as well as the coronal cavity were adhesively prepared. Afterwards the post was cleaned in alcohol. Since the use of the total etch technique is described in several recent publications as being advantageous in post cementation, the LuxaBond system was used. In the first step the root canal and the coronal walls were etched. The enamel has to be etched for 20-60 s max. and the dentine for 15 s max. (Picture 6). After rinsing with water for at least 15 s the water excess has to be removed gently. A moisture layer must remain on the dentine surface. After the etching process 1 to 2 drops of Pre-Bond have to be worked into the etched tooth substance for 15 s. with the red endobrush (Picture 7). After applying the Pre-Bond Bond A and Bond B has to be mixed for 5 s. in a 1:1 ratio (1 to 2 drops of each). The bonding-mixture has to be worked into the tooth substance for 20 s. with the black endobrush (Picture 8).



06 Etching canal and coronal cavity.



07 Applying the Pre-Bond (LuxaBond, DMG)



08 Applying the bonding mixture (Bond A + Bond B)



09 Filling the root canal with LuxaCore (DMG)



10 Insertion of the LuxaPost (DMG)



For information only

All surplus was gently removed using paper points and the bonding agent was light activated. In order to enhance the bond strength between post and the luting cement a wafer thin layer of Silane is applied. The post surface can be coated with a thin layer of LuxaCore prior to insertion. The root canal itself was filled with a small amount of LuxaCore (Picture 9).

The post was then placed into the root canal and again, the length of the post is controlled (Picture 10). In the same step the whole cavity was then filled up with LuxaCore and the material was light activated accordingly (Pictures 11). After the core build-up material was totally set, it was prepared for a full crown restoration (Pictures 12).

Conclusion

The LuxaPost system offers a very handy, easy and time efficient way to restore extended coronal defects after endodontic treatment.

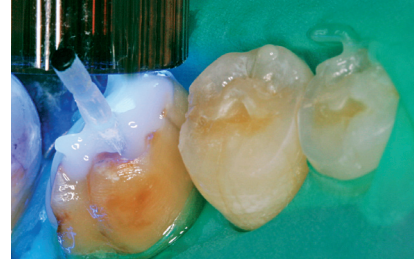
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11 Light curing (optional)



12 Final preparation