



Adhesive fixation and clinical evaluation of a new fiberglass post system

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Case description

A 35-year-old South American patient stated intermittent throbbing pain on tooth 21 as the main reason for her first visit to our practice.

Another concern was the esthetically negative effect resulting from the clinically unsuited composite restoration [Fig.1].

Therapy

After a rubber dam was placed and an endodontic access cavity created we followed with a chemo-mechanical root canal treatment. After the root canal treatment we waited one week before adhesively cementing in the glassfiber post (LuxaPost, DMG).

To verify correct positioning of the post not the post but the corresponding drill is used [Fig.2]. Regardless of the root length a 4 mm gutta percha layer must remain in the root canal in order to obtain a good apical seal.

Preparing the post surface:

If the post is too long it should not be cut with diamond or metal burrs since these would cause fraying of the post's fibers. It is recommended to lightly wet the surface with water and then shorten the post with a diamond wheel. The fiber-enforced root post is cleaned with a cotton roll wetted with solvent (acetone or chloroform) [Fig.3]. Subsequently, a double layer of silane (Silane, DMG) is applied to the surface [Fig.4].

Conditioning the dentine and cementing the post:

After sufficient space was created for the root post using the drill the root canal is cleaned with a syringe or micro pipette and distilled water. As an adhesive a dual cure total etch system is used (LuxaBond-Total Etch, DMG). In the root canal and onto the tooth core 37% phosphoric acid is applied to the enamel for 20 to 60 seconds and to the dentine for 15 seconds in order to fully remove the remaining smear layer [Fig.5]. The canal is then cleaned again with distilled water and dried with paper syringes [Fig.6]. In this step the use of compressed air is not recommended since it would dehydrate the dentine and cause the collagen fibers to collapse which would inhibit the formation of the hybrid layer.

One or two drops of PreBond are now applied to the root canal and onto the core. Subsequently, 1-2 drops of Bond A and Bond B are mixed in a 1:1 ratio for approx. 5 seconds and worked into the hard tissue for 20 seconds [Fig.7]. Excess adhesive must be removed with paper syringes. The resin-based build up material (LuxaCore-Dual, DMG) is used as luting cement. Apply the mixed cement into the root canal and, if desired, also onto the post surface [Fig.8]. For this step a suitable intraoral tip or a CentrixTM syringe can be used to introduce the cement evenly into the root canal, which also significantly reduces the risk of bubble formations. A lentulo spiral or other rotating paste distributors should be used at a low speed. After seating the root post in the root canal the area can be light-cured [Fig.9]. Then follows the core build up with the same build up material (LuxaCore-Dual) [Fig.10]. The definitive impression is taken with polyvinyl siloxane by means of a two-component mono-phase technique [Fig.11]. After the bite registration and color determination the full ceramic crown is fabricated, silanized (Silane, DMG) and cemented with a dual composite cement.



Fig.1 Initial situation



Fig.2 Drill is used as measuring device for the canal preparation



Fig.3 Shortening the post



Fig.4 Silanizing the post surface DMG Silane

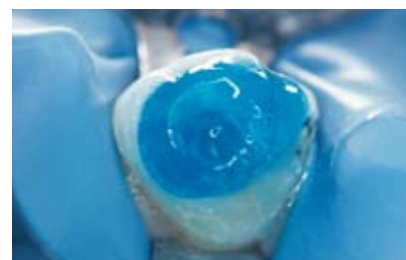


Fig.5 Conditioning of cavity and canal with phosphoric acid



Fig.6 Drying the canal lumen with paper syringes



Conclusion

Today glassfiber posts constitute an alternative treatment option besides the conventional ready-made and cast metal posts. Furthermore, we'd like to emphasize that the adhesive technique in the present case facilitated a totally metal-free crown and root treatment [Fig.12].

In conclusion we'd like to note that the post-core-tooth restoration with the post-endo-dontic system from DMG was successful [Fig.13].

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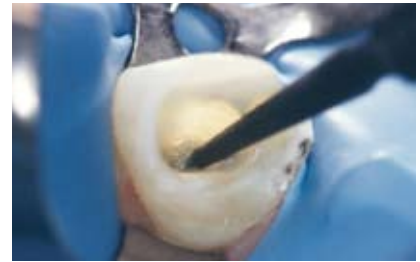


Fig.7 Application of the LuxaBond-Total Etch adhesive system



Fig.8 Applying the composite cement LuxaCore-Dual into the root canal



Fig. 9 Optional light polymerization



Fig. 10 Core build-up with LuxaCore-Dual



Fig.11 Final preparation of the core



Fig. 12 Overall biomechanical concept of tooth, post and core build up, a so-called »monoblock«



Fig.13 Clinical examination after one month