

Removal of fiber posts from endodontically treated teeth

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ABSTRACT: The removal of posts from endodontically treated teeth can be a major obstacle in the retreatment of teeth that have recurrent pathology, often leading to extraction of a tooth that could have been saved with endodontic retreatment. The use of a fiber post offers the advantages of a suitable elastic modulus and good bonding between post and cement, but also the advantage of easy removal, if so indicated by clinical findings. A special removal kit for fiber posts has been developed, and its use is illustrated, and described. The removal procedure can be completed in a very short time, usually less than 5 min. The tooth can then be restored with the same type and size of fiber post as was in the tooth prior to removal. Removal kits are found to be for single use only. (*Am J Dent* 2000;13:19B-21B).

CLINICAL SIGNIFICANCE: In the event that an endodontically treated tooth that contains a fiber post needs retreatment, the fiber post can easily be removed. A special removal kit for fiber posts has been developed. The tooth can be re-restored with the same type and size of fiber post as was in the tooth prior to removal.

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Introduction

The incidence of the need for endodontic retreatment has been estimated at 8-15% of all endodontic procedures. The reason may be that new apical pathology is observed, or that the restoration failed. The incidence of post fracture is extremely rare, for both metal and fiber posts. In 3,477 documented-clinical cases where carbon fiber posts (C-Posts) were placed at several European and Canadian universities, only one fracture has been observed.

In cases where a post was placed as part of the prosthodontic procedure, access to the canal requires removal of the post. In cases where a post has fractured, the remainder of the post should be removed before a new post is placed.

When new pathology occurs, or the restoration fails, the ability to remove the existing post depends on the type of material from which it is made. All metal posts are difficult to remove, with the posts made from base metal alloys (Ni-Cr alloys) the most difficult. Because of the hardness of the alloy, it is time consuming to remove the post.

If a tooth has been restored with a fiber post, its removal is a simple and quick procedure. The family of fiber posts includes the C-Post^a the U.M. C-Post,^a both carbon fiber posts, the Æstheti-Plus,^a an all-quartz fiber post, and the newest additions to the fiber post family, the Light-Post,^a a transparent post made of quartz fibers in an epoxy matrix.

The unique structure of these posts is that they consist of stretched parallel fibers in a resin matrix. The parallelism of the fibers helps to guide removal drills and burs to stay within the confines of the post, eliminating the risk of perforation. A special removal kit^a consisting of a pilot drill, a removal drill and a Peeso reamer is available. The removal kit and the placement drills are shown in Fig. 1. With these drills the removal of the fiber post becomes a safe and quick procedure. It is important for the clinician to allow the flexible drill to find its way down the post, with only light to medium pressure, using a rotational speed of 15,000 rpm. Because removal of the post will generate heat, a gentle water spray is highly recommended.

In Figs. 2-9, the removal of a No. 2 Light-Post in an extracted tooth is illustrated. For photographic reasons no rubber

stoppers have been used on the drills, however the depth of placement of the post should be determined radiographically and a proper length indicator placed on the removal drill. The drills will reduce the post to a very fine dust that clings strongly to clothing and poses an inhalation hazard. The use of a rubber dam is mandatory and high velocity evacuation is essential to avoid the spreading of the dust to clothing and skin.

The carbon fibers, and even more so the mineral fibers, are very tough materials that wear out the drills very quickly. It is strongly recommended that the removal procedure of a fiber posts is done with all new drills and reamers that are discarded after a single use. Retrieval of a broken drill is a very difficult and time-consuming procedure that is readily avoided by the use of a new removal kit.

Removal of a Light-Post

Step 1 - Trim the post to the pulpal floor, using a diamond bur, as shown in Fig. 2.

Step 2 - Use the pilot drill to make an orientation hole in the center of the remaining post. This pilot hole will prevent the flexible removal drill from drifting over the surface. The opening made with the pilot drill is shown in Fig. 3. The pilot hole can be drilled dry, providing good visibility.

Step 3 - Use the removal drill with the safe tip, also known as a Gutta Percha remover, to hollow out the post. Have a working length indicator on the drill (not shown). Use 15,000 rpm, light pressure and adequate water spray for cooling the tooth. Without cooling, the periodontal ligament may become exposed to elevated temperatures. The placement of the removal drill is shown in Fig. 4. The removal drill will require only one pass, although some clinicians prefer to interrupt the pass with an up and down motion to eliminate debris. The resultant channel is shown in Fig. 5.

Step 4 - The post is further hollowed out by the last drill in the Removal Kit, a safe tip, or Peeso reamer. Gently drill through the hollow post, for the full length of the post. Again use a water spray as a coolant and have a working length indicator in place. Gaining access to the post with the Peeso reamer is shown in Fig. 6. The post has now been well hollowed out,



Fig. 1. The removal kit and the placement drills.

Fig. 2. A No. 2 Light-Post in an extracted tooth. The post should be trimmed to the pulpal floor using a diamond bur,

Fig. 3. A pilot drill is used to make an orientation hole in the center of the remaining post. This pilot hole will prevent the flexible removal drill from drifting over the surface. The pilot hole can be drilled dry, providing good visibility.



Fig. 4. The removal drill is used with the safe tip, also known as a Gutta Percha remover, to hollow out the post.

Fig. 5. Resultant channel. The removal drill will require only one pass, although some clinicians prefer to interrupt the pass with an up and down motion to eliminate debris.

Fig. 6. The post is further hollowed out by the last drill in the Removal Kit, a safe tip, or Peeso reamer, to gently drill through the hollow post, for the full length of the post.



Fig. 7. The preshaping drill is used just as it is in placing a new post. A working length indicator is placed on the drill and water spray applied. The drill is used in a single pass.

Fig. 8. The finishing drill, a side cutting drill, is used to remove all remnants of the old post and leaves the canal ready for the new post. The canal is rinsed well to remove all debris.

Fig. 9. The new post is fitted and checked for proper placement.

with the outer layer still intact. At this point the Gutta Percha can be removed and endodontic retreatment initiated. After the root canal has been sealed again, the canal can be prepared for a new post.

Step 5 - The next drills for the procedure are found in the placement kit of the new fiber post that will be placed in the tooth. Posts come in 3 sizes, #1, #2 and #3. The post will be replaced with the exact same size and shape as the original post. Thus a removed #2 post will be replaced with a new #2 post. In our example a #2 Light-Post is removed and replaced with a new #2 Light-Post. In the case of posts with the U.M. design (University of Montreal), the mechanical drills of the proper ISO sizes will be used. The U.M. design comes in ISO sizes 90, 100, 120 and 140. For the ISO tapers only one drill will be used to remove the remainder of the post. After selecting the

proper drills, in this case the #2 preshaping drill and the #2 finishing drill, the removal of the post can be completed.

Step 6 - The preshaping drill is used just as it is in placing a new post. A working length indicator is placed on the drill and water spray applied. The drill is used in a single pass. (Fig. 7).

Step 7 - The finishing drill, a side cutting drill, is used to remove all remnants of the old post and leaves the canal ready for the new post. Rinse the canal well to remove all debris. The final canal aperture is shown in Fig. 8.

Step 8 - The new post is fitted and checked for proper placement as seen in Fig. 9.

Step 9 - Cementing the new post in place and restoring the tooth completes the procedure.

As can be seen from the above example, the removal and replacement of a prefabricated fiber post is a simple procedure that can be accomplished in just a few minutes. When selecting a prefabricated post, this ease of retreatment is one more reason to strongly consider a prefabricated fiber post as the treatment of choice.

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