

3M™ RelyX™ ARC ADHESIVE RESIN CEMENT ENDODONTIC POST CEMENTATION: CURRENT CONCEPTS, PROCEDURE AND TECHNIQUE TIPS

For many years, the use of cast posts was considered standard when restoring endodontically treated teeth. In recent years, many dentists have begun using prefabricated posts as a substitute for the traditional cast post. Posts that are retained by surface threads, mechanically engaging the dentin, are considered active. Posts that do not contact the root canal and rely on cement for retention are considered passive.

The wide variety of endodontic posts available to the dentist presents many options. The dentist also has different types of luting cement to choose from for post cementation. Zinc phosphate, polycarboxylate, and glass-ionomer cements are commonly used luting cements for routine post cementation. These cements not only enhance retention of the post, but can aid in creating a seal along the canal.¹ The cement layer also acts as a buffer that contributes to uniform stress distribution throughout the post and canal walls.²

ADVANTAGES OF ADHESIVE RESIN CEMENTS FOR POST CEMENTATION

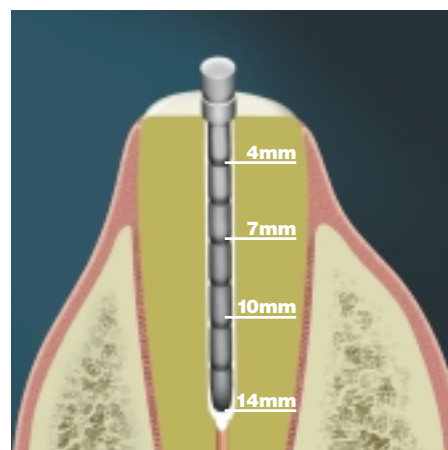
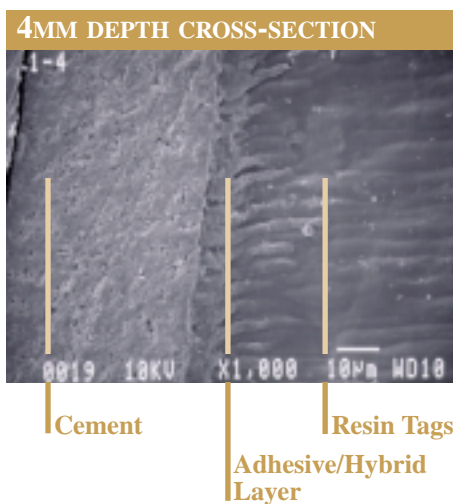
Recent studies have shown that resin-based cements are more retentive than nonresin cements.^{3,4} Resin-based cements are virtually insoluble in oral fluids and can bond to dentin and enamel with the use of acid etching techniques and bonding agents.⁴ In vitro studies have reported that removal of the smear layer and the use of unfilled resin produces a more retentive cement than zinc phosphate.^{1,5}

3M RECOMMENDS:

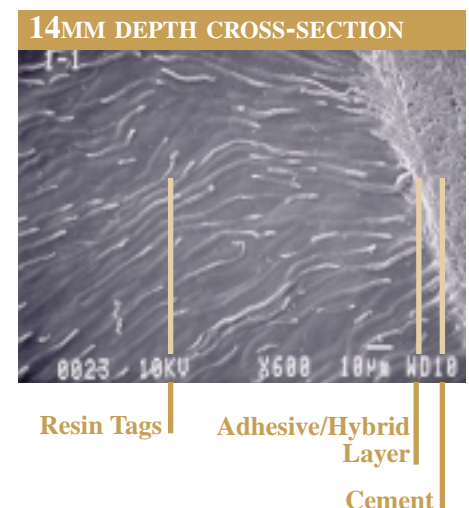
- **3M™ RelyX™ Luting Cement** (Vitremer™ Luting Cement) is recommended *for routine cementation of posts*. Advantages include simple application and easy cleanup. RelyX Luting cement is used for applications that typically would have been luted using zinc phosphate, polycarboxylate or traditional glass-ionomer cements.
- **RelyX ARC resin cement** is recommended for endodontic post cementation when *maximum performance or retention* is desired. When used in conjunction with the 3M™ Single Bond Dental Adhesive System, high micromechanical bonds to metals and tooth structure are achieved, with minimum film thickness (less than 25 microns) to insure complete seating.

ADHESIVE CURING

The use of a light-cured adhesive for the endodontic post cementation has prompted the question of how efficiently the Single Bond adhesive will cure at the bottom of the canal following the 10-second light cure. To address this issue, a post was bonded deep into a canal per the recommended instructions. The stainless post was placed in a 14mm deep canal, which is typically deeper than the average placement. The tooth was sectioned at depths of 4mm, 7mm, 10mm and 14mm. Each section was examined under SEM to determine if a well defined layer of cured adhesive was formed along with cured resin tags. The SEM photos clearly show a cured adhesive layer and resin tags were formed at depths up to 14mm.



Note: Post placed to 14mm for experimental purpose only and is not clinically recommended.



3M™ RELYX™ ARC ADHESIVE RESIN CEMENT POST CEMENTATION TECHNIQUE

PRODUCTS REQUIRED:

- Endodontic Post
- RelyX ARC resin cement
- Paper Points (for removal of excess material)
- 3M™ RelyX™ Ceramic Primer
- 3M™ Scotchbond™ Etchant
- 3M™ Single Bond Dental Adhesive System
- 3M™ Curing Light 2500 or 3M™ Curing Light XL 3000



Prepare the endodontically treated tooth to receive the post.

Tip: Trial fit and adjust post as needed prior to cementation.



Etch preparation for 15 seconds, rinse for 10 seconds.



Blot dry excess water.

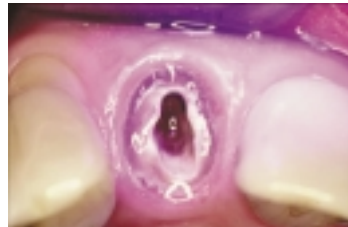
Tip: Remove excess moisture with an absorbent paper point.



Apply Single Bond adhesive to etched enamel and dentin. Dry for 5 seconds.



Important Tip: Remove excess pooled adhesive with an absorbent paper point. This will help to insure proper fit.



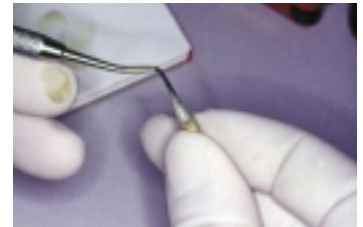
Tip: Position light guide directly above the prep. Light cure for 10 seconds. *Note: See reverse side for details regarding Single Bond adhesive curing efficiency in post preparations.*

Tip: It's good clinical practice to trial fit the post again, prior to cementation.



Apply RelyX ceramic primer to post. Dry for 5 seconds.

Tip: Bonds to cast posts can be enhanced by air abrasion,



Dispense the appropriate amount (**Tip:** 3 clicks) of RelyX ARC resin cement onto a mixing pad and mix for 10 seconds. Apply cement to the bonding surface of the preparation. Place a thin layer of cement on the post.



Seat the post. While holding in place, remove excess cement.



Optional Tip: Instead of immediate clean-up, wait 3–5 minutes, then “flick” excess cement from margins with an explorer.



Light cure for 40 seconds from the occlusal surface to allow immediate placement of core build-up material.

Photos courtesy of Robert A. Lowe, DDS, Chicago, IL



Dental Products

3M Center, Building 275-2SE-03
St. Paul, MN 55144-1000

¹ Sivers JE, Johnson WT: Restoration of endodontically treated teeth. *Dent Clin North Am* 36:631-648, 1992.

² Standlee JP, Caputo AA, Collard EW, et al: Analysis of stress distribution by endodontic posts. *Oral Surg* 33:952-960, 1972.

³ Shillingburg HT, Hobo S, Whitsett LD, et al: *Fundamentals of Fixed Prosthodontics*, ed 3. Chicago, Quintessence, pp 194-208, 1997.

⁴ Anusavice KI: *Science of Dental Materials*, ed 10. Philadelphia, WB Saunders Co, pp 555-580, 1996.

⁵ Mendoza DB, Eakle WS: Retention of posts cemented with various dentinal bonding cements. *J Prosthet Dent* 72:591-594, 1994.

* Refer to instructions for precautionary, detailed use, storage and warranty information.



Recycled paper
40% pre-consumer
10% post-consumer
Printed in the U.S.A.
© 3M, 1999.
70-2009-2081-0