THE DENTAL ADVISOR™

"Improved Patient Care through Research"

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EDITORS
John W. Farah, D.D.S., Ph.D.
John M. Powers, Ph.D.

EMAIL
info@dentaladvisor.com

WEB SITE
www.dentaladvisor.com

Non-metal Posts

The advent of more advanced composites and ceramics has led to the development of a wide variety of esthetic posts. Posts should provide good retention without overstressing root dentin. Fiber-reinforced posts have a stiffness closer to dentin and thus minimize the chance of root fracture. In addition, fiber-reinforced and ceramic posts can be bonded to dentin and to a composite core, creating better stress distribution and transfer when loaded. For severely compromised roots, an adhesively bonded fiber post may provide improved fracture resistance.

Glass and quartz fiber-reinforced resin and ceramic posts provide improved esthetics. The decision as to what post system to use should be based on both the mechanical and esthetic needs of the tooth to be restored. No single post system is ideal for all conditions.

Types of Posts

Fiber Posts

Fiber-reinforced posts can be separated into three groups: carbon, glass and quartz fiber. The fiber content ranges from about 35-65%, with a higher fiber content post typically having greater strength and stiffness. The fibers are bound with epoxy or polyester resins.

Carbon fiber posts are black and opaque with a stiffness similar to dentin. They have a higher strength than other fiber posts and are easier to remove.

Glass fiber posts are white, either translucent or opaque, and have a stiffness similar to dentin. The translucent posts allow light transmission (***Snowlight***, ***Luscent***).

Quartz fiber posts are also white, either translucent or opaque, but are stronger than glass fiber posts. The translucent posts also allow for light transmission (***Light-Post***, ***D.T. Light-Post***).

Ceramic Posts

Ceramic posts are zirconia-based and have high strength and stiffness. Ceramic posts have good esthetic properties and are biocompatible. Only ***Cerapost*** is available for in-office use. The post space need not be made parallel, but impression material should surround the non-parallel areas around the post in the pick-up impression.

Ceramic posts are white and opaque with a high stiffness and strength. They must be sand-blasted and silanated to improve the bonding but can be difficult to remove.

Post Selection Tips

- Use fiber posts to retain a core, not to reinforce a tooth.
- Ovoid and elliptical canals can have minimal preparation and still use a bonded fiber post with the remaining space filled with resin cement.
- The use of a carbon fiber post, even under a porcelain-fused-to-metal crown, can result in darkening of the gingival margin.
- Do not use carbon fiber posts that cannot be adequately opaqued for an all-ceramic crown.
- Fracture of fiber posts is rare.

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Rating Non-metal Posts

Product	Company	Shape	Tapered End	Vented	Retentive Head	Color-coded	Drill-matched	Radiopacity*	Diameters Available	Lengths Available	Cost, $/Post†	Cost, $/Post†
Carbon Fiber:												
CARBOPOST	DANVILLE MATERIALS/ CARBOTECH	Parallel	●				●	L	4	1	8.00	na
CF CARBON FIBER POST	J. MORITA USA	Parallel	●				●	L	4	1	3.99	na
CORE-POST	DEN-MAT	Parallel	●					L	5	1	6.50	91%
Glass Fiber:												
CORE-POST	DEN-MAT	Parallel	●					L	5	1	6.50	91%
FIBREKOR POST	PENTRON CLINICAL TECHNOLOGIES	Parallel		●	●		●	M	3	1	4.50	91%
FRC POSTEC	IVOCLAR VIVADENT	Tapered	●				●	M	2	2	10.55	86%
GF GLASS FIBER POST	J. MORITA USA	Parallel	●				●	L	4	1	3.99	na
LUSCENT	DENTATUS	Tapered	●			●	●	L	3	3	7.67	na
PARAPOST FIBER WHITE	COLTENE/WHALEDENT	Parallel		●	●	●	●	M	4	2	9.37	92%
PERMAPOST FIBER	ULTRADENT	Parallel	●	●	●		●	L	2	1	4.95	na
TWIN LUSCENT	DENTATUS	Hourglass	●	●		●	●	L	3	3	8.33	na
SNOWPOST and SNOWLIGHT	DANVILLE MATERIALS/ CARBOTECH	Parallel	●			●	●	M	4	1	8.00	86%
Quartz Fiber:												
AESTHETI-PLUS	BISCO	Parallel	●		●		●	L	3	1	9.80	na
D.T. LIGHT-POST	BISCO	Tapered	●				●	M	3	1	11.00	92%
LIGHT-POST	BISCO	Parallel	●		●		●	L	3	1	9.80	na
U.M. AESTHETI-PLUS	BISCO	Tapered	●		●		●	L	3	1	9.80	na
Zirconia:												
CERAPOST	BRASSELER USA	Tapered	●			●	●	H	3	1	4.39	88%
COSMOPOST	IVOCLAR VIVADENT	Parallel	●					H	2	1	19.20	91%

*L=low, M=medium, H=high
†Costs are listed for comparison only and are not used to calculate the ratings.

THE DENTAL ADVISOR Recommends:

Carbon Fiber: ***Core-Post***
Glass Fiber: ***ParaPost Fiber White, Core-Post, FibreKor Post***
Quartz Fiber: ***D.T. Light-Post***
Zirconia: ***CosmoPost***

Core-Post
(Den-Mat)

ParaPost Fiber White
(Coltene/Whaledent)

FibreKor Post
(Pentron Clinical Technologies)

Non-metal Posts *continued*

Canal Preparation Tips

- Use a diagnostic radiograph to estimate post length.
- Use a post at least as long as the coronal tooth height to be restored.
- Have 4-5 mm of gutta percha at the root apex to maintain an apical seal.
- Use reamers to establish post length and to remove gutta percha from the canal walls. Use the smallest drill to establish initial length.
- Use an endodontic file stopper to maintain proper length.
- Terminate canal preparation coronal to any root curvature.
- Keep post diameter equal to the original endodontic canal preparation without widening the canal.

Post Cementation Tips

- Bond non-metal posts using resin cement.
- Silanate glass and quartz fiber posts to improve bonding.
- Shorten fiber posts using a medium or coarse diamond or separating disc.
- Shorten ceramic posts from the coronal portion using a diamond bur.
- Ensure that the apical end of the post space can be accessed by Microbrushes.
- Eugenol sealers inhibit the set of resin cement. Ask the endodontist to use a non-eugenol sealer.
- Use a cavity cleaner to remove lubricants and contaminants before cementation.
- Agitate etchant within the canal with a Microbrush, rinse thoroughly, and gently dry with air and paper points. Scrub bonding agent into the canal walls and remove excess with a paper point.
- Use a lentulo spiral or injection tip to place cement in the canal.
- Insert post slowly and hold in place for several seconds before curing cement.
- Light cure the coronal portion of a dual-cured resin cement to secure the post.
- Use only composite cores with fiber posts.

Post Removal Tips

- Use a commercial fiber post removal kit.
- Carbon fiber posts are typically easiest to remove. Start a pilot hole down the center to length and expand the opening with progressively larger reamers.
- Ceramic posts are difficult to remove if not loose. Attempts at removal with conventional burs may create sparking. Refer removal of ceramic posts to a specialist who can vibrate or trephine the post out.
- Refer removal of tooth-colored posts that are hard to see. ■

Guide to Post Features

Color-coded
Color-coded systems allow visual size matching of posts to respective post drills and makes re-ordering easier.

Diameters and Sizes
The diameter of the post has little impact on retention. Prepare the post space conservatively.

Radiopacity
High radiopacity of a post makes radiographic visualization and verification easier and may reduce unwarranted retreatment of teeth.

Retentive Head
Retentive heads (grooves, taper, ball) mechanically bind a core to the coronal portion of the post. Larger heads may limit their use in shortened or narrow teeth. Adjust the length from the apical portion of the post.

Shape
Non-metal posts are non-threaded and passive. Retention is increased by using a parallel post, increasing post length, and adhesive resin cementation. Long, tapered posts are less retentive than parallel posts but require less dentin removal. An hourglass-shaped post improves retention by a smooth undercut in the mid-section of the post.

Size-matched
Size-matched systems allow for quicker selection and better adaptation of the appropriate posts.

Tapered End
These posts allow for less dentin removal. Resin cement distributes root stresses more evenly with tapered posts.

Vented
Vented posts allow excess cement to exit from the canal when seating a post as hydraulic pressures are created – important with more viscous cements.

***Note:* Use bonding agents and core materials as recommended by the manufacturer of the post system whenever possible.**