Root Canal Posts

According to a recent review, we do not have sufficient information to decide which type of post is best. In EBD, clinical trials, with all of their uncontrollable variables, are given disproportionate significance over in-vitro studies, which allow isolation of variables.

- Bolla M, et.al. Root canal posts for the restoration of root filled teeth. Evid Based Dent 2007;8:42

Naturally there are factors such as root form or canal geometry which are not fully elucidated, but a lot of information is available.

Vertical root fractures

Vertical root fractures have been observed most frequently with threaded posts, custom cast gold posts are in second place.


The risk of non-restorable root fracture is reduced with bonded FRC posts.


This is true for crowned teeth, but also for teeth with intracoronal restorations. If FRC posts were placed in endodontically treated premolars; the fracture strength was increased only moderately compared to the teeth without posts. However, the teeth with fibre posts showed mostly fractures which permitted a new restoration, those without were generally non-restorable.


Clinical results published to date reflect the in-vitro studies.

Posts do not “strengthen” the root in relation to vertical fracture, but can significantly reduce the risk of cervical fracture.


Fiber posts restore much of the original hysteresis of natural teeth by undergoing elastic rather than plastic deformation, even though the argument of “modulus like dentin” is nonsense.


**Ferrule Effect**

The failure rate for conventionally cemented crowns without a ferrule is increased by 800%.


In the fairly common clinical situation with minimal or no ferrule effect interproximally, studies show a clear advantage of adhesive FRC posts, with fracture strengths similar to complete ferrule preparations. The necessity of surgical crown lengthening or orthodontic extrusion is certainly reduced, although the patients should still be informed of the risk.


**Loss of Retention**

The most frequent failure is loss of retention (true for all posts). The bond to canal dentin is not ideal, because of the high tubule area. Note: Single component self-etching adhesives show poor results, perhaps because of the minimal osmotic gradient from the periodontal ligament space. The post should be cleaned and treated with silane, but this is not the weak link.

Leaving aside the problems caused by stupid material recommendations and idiotic instructions for use, the significance of the dentin bond is reflected in the retention values related to post length. Increasing post length from 5 to 10 mm improved retention in epoxy blocks (excellent bond), but had no effect in natural teeth, with all failures between cement and dentin.


This is due to the restricted shrinkage. If the thickness of the shrinking composite exceeds 0.1 mm, even a dentin bond strength of 50 MPa would not prevent gaps.
Cementation of FRC posts

Compromises during cementation of fiber posts should not be made:

- Achieve primary stability of the post in the canal during try-in (if required increase length, diameter, or switch to a parallel post). This is the only way to assure a minimal film thickness of the cement and true adhesion.
- Use a two component adhesive (self-etch or etch-and-rinse, I prefer the latter). If the dentin is etched, observe the solvent requirements in relation to dentin moisture.
- Use a microbrush to “scrub” the walls with the adhesive.
- Dry every adhesive thoroughly before placing the cement and post. Do NOT precure.
- Use a dual-cured cement, do not rely on light curing alone.
- The post space must be filled from the bottom up, use a lentulo or small injection tip.
- Hold seating pressure for adequate time, there is a lot of hydraulic force to overcome.
- If you have primary stability, but only in the apical section, postbond immediately after polymerization, do NOT contaminate or re-etch.

For at least one author, the evidence is clear enough to make an unconditional recommendation for adhesive FRC posts followed by adhesive restoration.


I agree.