

Influence of post relining with composite and association of universal dentin adhesive and self-adhesive resin cement on fiber post push-out bond strength.

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Abstract

The adhesion into root canal is a critical procedure, therefore, this study evaluated different strategies to fiber post luting. The association of the universal self-etching adhesive to the self-adhesive cement worsens the fiber post retention. And the bond quality in deeper regions of the root canal is still a challenge to be overcome.

Key words: Dental cements, cementation, dentin.

Introduction

The root canal dentin morphology does not favor the adhesive procedures, in addition, its anatomy prevents proper lighthcuring in deeper areas of root canal.¹ Therefore, the aim of this study was to evaluate the influence of post relining with composite resin and the association of universal self-etch adhesive to self-adhesive cement on push-out bond strength of fiber post.

Results and Discussion

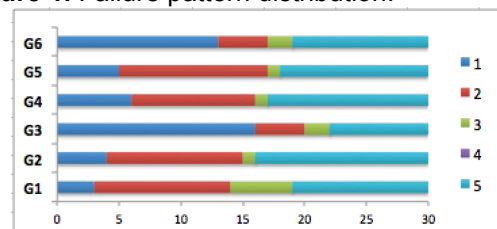
The groups were divided according to the adhesive luting strategy: G1: post + Scotchbond Multi-Purpose (SBMP) + RelyX ARC (ARC); G2: post + RelyX U200 (U200); G3: post + Single Bond Universal (SBU) + U200; G4: relined post + SBMP + ARC; G5: relined post + U200; G6: relined post + SBU + U200. The push-out test was applied until failure and failure pattern was analyzed by stereomicroscopy (n=10). The results are described in Chart 1 and Figure 1. The split plot analysis of variance showed that post relining and different luting approaches ($p < 0.05$) affected the post retention. The composite relining improved the post systems performance. The association of universal adhesive to self-adhesive cement decreased bond strenght values. Despite luting strategy, the greater the root canal depth, worse the post retention. The predominant failure pattern was adhesive between dentin and cement in the groups that used universal adhesive and predominantly mixed in the other groups. The universal self-etch adhesive has acid monomer, as well as the self-adhesive cement, however, there was no compatibility between them.²

Chart 1. Mean and standard deviation of the push-out values (MPa) as a function to the luting technique and the root area.

Luting Technique	Root canal area		
	Cervical	Medium	Apical
G1	10,65 (1,26) ^{Ac}	9,14 (1,17) ^{ABb}	7,76 (1,22) ^{Bb}
G2	12,32 (1,29) ^{Abc}	10,24 (0,80) ^{ABab}	8,61 (1,10) ^{Bb}
G3	10,89 (2,16) ^{Ac}	8,07 (1,08) ^{Bb}	6,61 (1,37) ^{Bb}
G4	13,88 (1,69) ^{Ab}	11,75 (1,45) ^{ABa}	9,61 (1,53) ^{Bab}
G5	14,42 (2,09) ^{Aa}	11,81 (1,94) ^{Ba}	9,20 (1,13) ^{Cab}
G6	11,97 (1,42) ^{Abc}	10,06 (2,00) ^{ABab}	8,05 (1,43) ^{Cb}

* Uppercase letters indicate statistical differences between rows and lowercase letters indicate statistical differences between columns ($p < 0.05$), according to Tukey's HSD test.

Figure 1. Failure pattern distribution.



* 1) Adhesive failure between dentin and resin cement; 2) Adhesive failure between resin cement and fiber post; 3) Resin cement cohesive failure; 4) Fiber post cohesive failure and; 5) mixed failure.

Conclusions

The association of the universal self-etching adhesive to the self-adhesive cement decreased the fiber post bond strenght. Moreover, despite luting technique, the post retention is worse in deeper areas of the root canal.

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¹ Faria-e-Silva, A. L.; Arias, V. G.; Soares, L. E.; Martin A. A. e Martins, L. R. *J. Endod.* **2007**, *33*, 303-305.

² Cheong, C.; King, N. M.; Pashley, D. H., Ferrari, M.; Toledano, M. e Tay, F. R. *Oper. Dent.* **2003**, *28*, 747-755.