Original Article

Analysis of fiber post–resin cement interfacial adaptation at different post regions using field emission scanning electron microscopy

Abstract

Introduction: An ideal interfacial adaptation between fiber posts and resin cement is critical for optimum retention and good scenario. Therefore, this research was designed to estimate the interfacial adaptation at fiber post–resin cement interfaces using field emission scanning electron microscopy (FESEM) investigation.

Materials and Methods: Forty-five extracted human lower premolars with sole and round canal were classified into three groups (n = 15) following the fiber post types. Each tooth was decoronated and implanted in acrylic resin-filled polyvinyl chloride mold. Roots were undergone endodontic management and post space preparations. Then, each group was classified into three subdivisions (n = 5) according to the resin cement types. After cementation, each post space was marked into apical, middle, and coronal thirds and sectioned horizontally into three 2 mm disc thickness for each third. After that, each disc in each sub-group was then subjected to FESEM analysis to evaluate the gaps width at fiber post–resin cement interface in μm. The data were recorded and statistically evaluated and compared using two-way analysis of variance and Duncan's multiple range tests at $P \leq 0.05$.

Results: The everStick post with the RelyX U-200 cement group showed significantly the least gap width mean, while the glass fiber post with the TOTAL C-RAM cement has statistically the greatest gap width mean along the coronal, middle, and apical thirds of fiber post at $P \leq 0.05$. The apical third of fiber post showed significantly the greatest mean of gap width, while the middle third showed the least gap width mean at $P \leq 0.0$. **Conclusion:** Different brands of fiber post and resin cement can influence the interfacial adaptation at post–cement interface