Abstract

Evaluation of the influence of different types of resin cements on the bond strength of fiber posts: A systematic review study and meta-analysis

Introduction: Debonding of the fiber posts is a dominant failure in restoring endodontically treated teeth. The aime of this study was to investigate the effect of different conventional and self-adhesive resin cements on the bond strength of fiber posts in different root regions.

Methods and Materials: This systematic review was carried out according to the PRISMA statement. In this study, Pubmed, Web of Science and Scopus databases were searched according to the pre-defined keywords until August 2021 and with english-language restriction. Retrieved literature were screened by two of researchers using inclusion and exclusion criteria, independently. In-vitro and ex-vivo articles which evaluated the bond strength of fiber post cemented with dual conventional or self-adhesive resin cements to root canal and those that presented bond strength data in megapascal as an outcome, were included in the study. Meta-analyses was conducted using RevMan statistical software (V5.3) with random effect model on the bond strength index.

Results: Of the total of 189 retrived studies, 39 were included in the qualitative synthesis and 38 studies in meta analysis. Global analysis showed a difference between groups as self adhesive resin cements had significantly higher bond strength results than conventional resin cements in the all three areas of the root together ($p=0.02$), but there was no significant difference between groups in the coronal, middle, apical regions of the root ($p>0.05$). The subgroup analysis indicated that bonding strength results for conventional cements with self etch and self adhesive were significantly different ($p = 0.003$) but there was no difference between etch and rinse and self adhesive cement at all three areas of the root together ($p = 0.33$). Also, in subgroup analysis of coronal, middle and apical regions, there was no significant difference between groups ($p>0.05$).

Conclusion: Fiber post bonded with self adhesive resin cements showed superior overall adhesive performance compared with Conventional multistep resin cements in all three area together, but different adhesive cementation protocols did not influence the PBS of fiber post to root dentin in the coronal, middle and apical thirds of the root.

Keywords: resin cements, fiber post, bond strength, dentin surface