FIBER POST RADIOPACITY STUDIES


The lack of radiopacity found with some non-metallic prefabricated radicular posts in combination with the luting cement can make radiographic interpretation difficult. **Objective:** This study evaluated the radiographic density of nine cements and eleven posts. Methods: Cements tested were: ZnPO₄ (Z) Mizzy; Duo-link (DL), Hi-X (HX) Bisco; Ketac Cem (KC); Rely X ARC (RA), Rely X Luting (RL), Rely X Unicem (RU) 3M ESPE; Panavia F (PF) Kuraray; Variolink (V) Ivoclar. Posts tested were: **D.T. Light Post (DT)** RTD, St Egreve, France; Twin Lucent Anchor (TLA) Dentatus; Parapost XP steel (XP); Parapost XT titanium, (XT); Fiber White (FW), Whaledent; Achromat (A) Axis; Fibrekor (FK) Pentron,; FRC Postec (FRC) Ivoclar. Individual radiographs of each specimen and a continuous aluminum ramp were made using D-speed film (Kodak). These films were scanned and analyzed with NIH Image software. Data were analyzed with a one-way ANOVA and Tukey-Kramer at α=0.05. Results: The mean (sd) density of the cements in terms of equivalent thickness of aluminum were: Z 4.50 (0.45)a, V 3.82 (0.19)b, HX 3.42 (0.27)c, RU 1.57 (0.23)d, RA 1.07 (0.10)e, KC 1.06 (0.17)e, RL 1.02 (0.21)e, DL 0.64 (0.14)f, PF 0.60 (0.24)f. The density of the posts were: XP 11.12 (0.15)a, XT 5.56 (0.18)b, A 1.74 (0.07)c, DT 1.65 (0.12)c, FRC 1.34 (0.12)d, FK 1.05 (0.14)e, FW 0.61 (0.10)f, TLA 0.38 (0.10)g. Means of groups with the same superscript were not significantly different. Conclusion: ISO 4049 (2000) for polymer-based materials stipulates that a material must exhibit the radiopacity of...
an equivalent thickness of aluminum to be deemed radiopaque. Seven of the nine cements and six of the eight posts were found to meet the criteria.


**Objective:** Various articles describe concern for the lack of opacity of glass fiber posts and resin cement bonding systems. The objective of this study is to compare the radiopacity of five different fiber post systems and the opacity of two commonly used resin cement systems to bond the fiber posts. **Methods:** The five fiber post systems [Rely X (R), Parapost (P), DT Light-Post RTD (B), Ivoclar (I), and Unicore (U)] and a Fluke Biomedical mammographic aluminum step wedge ranging from 0.4mm to 6mm thick with 15 steps were radiographed on a single film. Rely X Unicem and Ivoclar resin cements were also radiographed with the aluminum step wedge on a separate film. The opacity of each fiber post was converted to aluminum equivalents, as were the opacities of the two bonding resins, taking into consideration the diameter of the posts and thickness of the cement samples. **Results:** The average aluminum equivalent for Rely X was 1.764 ± .04, Parapost 1.62 ± 0.04, DT Light-Post X-RO (RTD/ Bisco) 2.400 ± 0.11, FRC Postec Plus (Ivoclar) is 2.425 ± 0.03, and Unicore 1.986 ± 0.05. RelyX Unicem resin cement yielded an aluminum equivalent of 4.243 ± 0.62 and Ivoclar yielded an equivalent of 3.194 ± 0.25. **Conclusion:** Statistical analysis revealed significant differences between all posts' mean normalized aluminum equivalent levels with the exception of DT Light-Post and Ivoclar. DT Light-Post X-RO, and Ivoclar produced notably higher aluminum equivalents, signifying these fiber posts are much more radiopaque. The RelyX Unicem resin cement also had a considerably higher mean normalized aluminum equivalent level than Ivoclar, revealing a much more radiopaque.


**Objectives:** The aim of this study was to analyse the radiopacity of some glass/carbon fibers and metal post and to compare with the radiopacity of human enamel and dentin. **Materials and Methods:** Four disks of each post (21 materials), mesiodistal sections of human molar (1±0.01 mm thickness) and aluminium step wedges were radiographed on dental X-ray films. After development, dental films were digitized by scan and radiopacity values were recorded for each sample. The radiopacity of the samples was expressed in terms of the equivalent thickness of aluminium per 1mm unit thickness of material.
Results:
- ParaPost XP METAL (Coltene Whaledent), FRC Postec Plus (Ivoclar Vivadent), Danville Ice Light (Danvile), Light- Post (RTD), DT Light-Post (RTD), showed radiopacity values higher than enamel.
- Glassix (NORDIN S.A), UniCore Post (Ultradent), Danville Ice Post (Danvile), ParaPost Fiber Lux, ParaPost TaperLux (Coltene Whaledent) showed radiopacity values significantly greater than dentin while
- ParaPost FiberWhite (Coltene Whaledent), RelyX™ Fiber Post (3M ESPE), Mirafit White, Mirafit Carbon (Hager & Werken), Fibrapost (PDSA), Saremco posts Non-Stop Fibre (Saremco Dental AG), Aestheti-Plus, DT White Post (RTD), materials showed radiopacity values lower than dentin. Composites from Reforpost Glass Fiber (Angelus), Core post - Glass fiber post, Core post - Carbon fiber post (DenMat) had a radiopacity lower than dentin while the second component of these posts metal had a greater radiopacity than enamel. The results recorded showed statistically significantly differences (significance level = 0.05) when evaluated with One-Way ANOVA statistical analysis.

Conclusions: Future fiber posts are recommended to have higher radiopacity values than dentin and perhaps ideally similar to or higher than that of enamel for improved of clinical detection. The posts with a lower radiopacity than 1 mm Al could be considered sufficiently radiopaque if the posts would be cemented with higher radiopaque cement. Further works in this direction are needed.