

عنوان مقاله:

Short-term Effect of Four Root Filling Materials on the Flexural Strength of Human Root Dentin

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خلاصه مقاله:

Background: This study aimed to assess the effects of calcium hydroxide, Biodentine, calcium-enriched mixture (CEM) cement, and mineral trioxide aggregate (MTA) on root dentin flexural strength after a 30-day exposure period. **Methods:** This in vitro experimental study evaluated 25 freshly extracted sound human incisors with no caries or restorations. The apical 5 mm and the coronal two-thirds of the crowns were cut such that all samples had 10 mm length. Dentin samples ($n=20$ in each group) were then exposed to 2 mm thickness of calcium hydroxide, Biodentine, CEM cement, MTA, or saline (control) in petri dishes for 30 days. Finally, dentin samples were subjected to a three-point bending test after the intervention, and the flexural strength data were analyzed using one-way ANOVA, Tukey's test, and t test. **Results:** Thirty-day exposure to all four biomaterials decreased the flexural strength of root dentin ($P < 0.05$). The four groups were significantly different in terms of the flexural strength of root dentin ($P = 0.001$). The flexural strength of root dentin was significantly lower following exposure to calcium hydroxide ($P = 0.003$), Biodentine ($P = 0.011$), CEM cement ($P = 0.001$), and MTA ($P = 0.007$) compared to saline. The reduction in strength following exposure to calcium hydroxide was higher than that in Biodentine, CEM cement, and MTA groups ($P < 0.05$) while the latter three were not significantly different in this respect ($P > 0.05$). **Conclusions:** In general, all four tested biomaterials decrease the dentin strength although this reduction is more prominent by calcium hydroxide.

کلمات کلیدی:

Root canal filling materials, Mineral trioxide aggregate, Biodentine, CEM cement, Calcium hydroxide, Dentin, Flexural strength

