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Comparison of Push-out Bond Strength of Single-cone and Cold Lateral Compaction Obturation Techniques

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Background and aims: The aim of the present study was to compare the push-out bond strength of gutta-percha to root dentin with the single-cone and cold lateral compaction canal obturation techniques.
Materials and methods*:* The root canals of 58 human mandibular premolars were prepared using modified crown-down technique with Protaper rotary files up to # F3 master apical file and divided randomly into groups A and B based on canal obturation technique. In group A (n=29) the root canals
were obturated with single-cone technique with #F3 (30/.09) Protaper gutta-percha, which was matched with MAF in relation to diameter, taper and manufacturer; in group B (n=29) the canals were obturated with gutta-percha using cold lateral compaction technique. After two weeks of incubation,
three 2-mm slices were prepared at a distance of 2 mm from the coronal surface and push-out test was carried out.
Results : Table 1 presents the means and standard deviations of push-out bond strength values with the two canal obturation techniques. The results of Kolmogorov-Smirnov test showed normal distribution of bond strength values and data were parametric (Kolmo-gorov-Smirnov z = 1.05, P = 0.22). Independent two-sample t-test was used to compare mean bond
strength values between the two groups. The results showed significant differences in mean bond strength values between the two groups (P = 0.008). It was concluded at a 95% confidence interval that the mean push-out bond strength values in group B (lateral compaction technique) were higher than those in group A (single-cone technique).

Table 1. The means and standard deviations of push-out bond strength values in the two study groups

Groups	Mean ± SD	Minimum	Maximum
Group B (lateral compaction technique)	4.03 ± 2.51	0.669	11.328
Group A (single cone technique)	2.36 ± 0.79	4.027	1.51

Conclusion
On the whole, considering the limitations of *in vitro* studies, the results of this study showed that use of the single-cone technique, with a master cone match-ing the root canals prepared with tapered rotary in-struments, resulted in a lower bond strength com-pared to the use of cold lateral compaction technique.

References:

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