



## Adaptation of a Single-Cone in Prepared Teeth with Two Reciprocating Systems

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### ABSTRACT

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**Introduction:** This *ex vivo* study aimed to compare the adaptation of single gutta-percha cone in teeth prepared with the Wave One Gold and Reciproc Blue reciprocating systems through cone-beam computed tomography. **Materials and Methods:** A total of 40 recently extracted mono radicular premolars were randomly assigned into two groups ( $n=20$ ) corresponding to Reciproc Blue and Wave One Gold reciprocating systems and adapted to a single cone system. Each group was evaluated by cone-beam computed tomography at 1 mm, 2 mm and 4 mm from the apical foramen. We evaluated the number of walls adapted by the cone, quality of filling and the number of spaces between the filling and the walls of the root canal. The Mann-Whitney U and T-tests were employed to associate and compare both groups ( $P<0.05$ ). **Results:** At 1 mm in the lingual wall the Wave One Gold system did not adapt by 45% compared to 15% with Reciproc Blue ( $P<0.05$ ). Likewise, the single-cone filling technique of the Reciproc Blue system showed better sealing quality obtaining an ideal category (75%) compared to Wave One Gold (40%) ( $P<0.05$ ). The amount of space (mm) found between the cone and the filling walls was greater with Wave One Gold. However, these values were not statistically significant. **Conclusions:** Based on this *ex vivo* study the better adaptation of root canals and ideal filling condition was more frequent with Reciproc Blue than Wave One Gold system, mainly at 1 mm from the radicular apex.

**Keywords:** Cone Beam Computed Tomography; Root Canal Obturation; Single Cone Obturation

### Introduction

At the moment of preparing the root canal system, the apical configuration is a priority at the moment of choosing the instrumentation system since an optimal preparation precedes a correct filling which guarantees a hermetic seal which means the success of the endodontic therapy [1-3]. Several instrumentation systems are proposed in order to achieve a correct apical preparation, which with their design and mechanization of the movement improve the three-dimensional spatial configuration of the lumen and walls of the root canal obtaining correct adaptation to the morphology of the root canal [4, 5].

Specifically, each instrumentation technique has a single cone filling system which has an identical configuration to the instrument used in the root shaping that includes diameter at the tip and conicity in its extension which would ensure a complete and accurate adaptation of the cone along the root canal [6-8].

Different methods have been defined to evaluate the adaptation and quality of the filling in which the tactile and visual through radiographs are those that the clinician tests to evaluate the adaptation after the cone reaches the established and worked length, but currently there are no reports of a single cone filling system with complete and optimal adaptation in the root canal system [9-12].

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