Apical extrusion of debris produced by reciprocating and continuous rotation systems

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INTRODUCTION
Apical extrusion debris (AED), an undesirable consequence of root canal instrumentation can be associated with pain or edema and may delay the periapical healing. It has been shown that it can depend on different factors, as the kinematics, alloy type, number and diameter of instruments used.

OBJECTIVE
To evaluate and quantify the AED in root canal instrumentation with continuous and reciprocating rotary systems.

METHODS AND MATERIALS
80 single root canal teeth were randomly divided into 4 groups (n = 20): One Shape® (OS), Protaper NEXT® (PTN), Hyflex® EDM (HF) and WaveOne Gold® (WOG).

RESULTS
There was AED in all instrumentation techniques. Statistical analysis showed significant differences in AED between the techniques used (α = 0.002). Among the WOG and OS techniques (α = 0.003), WOG and PTN (α = 0.023) and WOG and HF (α = 0.028).

CONCLUSION
HF technique presented lower AED while WOG technique with reciprocating movement is a major risk factor due to greater AED. The results of this study indicated that practitioners should be aware of the debris extrusion with each instrument, which could help with the decision for selection of a particular instrument.

CLINICAL IMPLICATION
The choice of root canal instrumentation system influences the extrusion of debris.

KEYWORDS
Extrusion debris, root canal instrumentation, continuous rotation, reciprocating movement, M-Wire, CM-Wire

BIBLIOGRAPHY