



**THE INCIDENCE OF MICROCRACKS AFTER ROOT CANAL  
PREPARATION BY ONE CURVE, PROTAPER NEXT,  
WAVEONE GOLD, HYFLEX EDM AND PROTAPER  
UNIVERSAL ON ROOT CANAL WALLS - A  
STEREOMICROSCOPE ANALYSIS**

**By**

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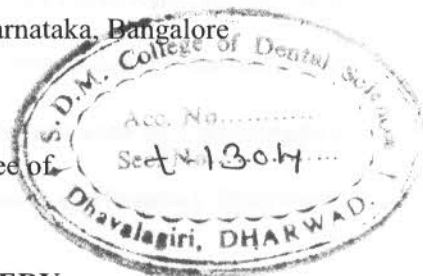
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## **ABSTRACT**

### **Title**

The incidence of microcracks after root canal preparation by One curve, Protaper Next, Waveone Gold, Hyflex EDM and Protaper universal on root canal walls - A stereomicroscope analysis

### **Background and Objectives**

Prudent selection of file system for instrumentation is of utmost importance for long term endodontic success. Most of Nickel titanium rotary instruments will cause dentinal defects in the form of microcracks. With repeated stress application by occlusal force, these defects may propagate and cause root fracture. The objective of the study was to evaluate the dentinal defects caused by One Curve, Protaper Next, Wave one gold, Hyflex EDM and Protaper Universal file systems.

### **Materials and Methodology**

100 single rooted mandibular premolar with straight root were used for the study. These teeth were randomly divided into 5 groups (n=20) Group A-Protaper Universal, Group B-Protaper Next, Group C-Wave One gold, Group D-Hyflex EDM and Group E-One Curve. These teeth were decoronated and standardized to uniform length and periodontal stimulation was done by using silicon impression material and self cure acrylic. Biomechanical preparation was done with respective files in the each groups. After biomechanical preparation teeth were sectioned horizontally at 3mm, 6mm, and 9mm from the apex and examined under stereomicroscope for dentinal defects. Data obtained were analysed with Chi square test with Yates correction.

**Results**

One Curve file system showed less number of dentinal defects followed by Hyflex EDM and Protaper Next. Protaper universal and Wave one gold showed more defects which was statically significant when compared to one curve file system ( $P<0.05$ ).

**Conclusion**

One Curve file system produced significantly less dentinal defects during root canal preparation when compared to other rotary systems tested in this study.

**Key words**

Dentinal microcracks; Hyflex EDM; Protaper; One Curve; Stereomicroscope; Wave One gold