

## **ABSTRACT**

### **AIM**

The aim of the present study was to compare the dentinal defects caused during root canal preparation with hand file and two different Ni-Ti rotary file systems.

### **MATERIALS AND METHODS**

The study samples comprised of sixty extracted intact, non carious human mandibular premolars which were randomly divided into 4 Groups. Each Group consists of 15 specimens. Teeth of the experimental Groups were decoronated and standardized to the root length of 12mm. **Group 1:** Control Group with unprepared root canal. **Group 2:** Root canal preparation done by hand K files [Step back method]. **Group 3:** Root canal preparation done by rotary Mtwo files [Crown down method]. **Group 4:** Root canal preparation done by rotary K3XF files [Crown down method]. During root canal preparation of all specimens of the experimental Groups, 5% sodium hypochlorite was used as an irrigating solution and 17% EDTA gel was used as a lubricant and final rinsing done with normal saline then with distilled water . All specimens were stored in the distilled water until further sectioning procedures. Horizontal sectioning was done with the hard tissue microtome under water cooling at 3mm and 6mm levels from the root apex Each section was evaluated for dentinal defects under the Stereomicroscope of 45X magnification.

### **RESULTS**

Group 1 had lesser number of dentinal defects followed by Group 2, 3 and 4. Group 3 and Group 4 had more number of Fracture type of dentinal defects .

### **CONCLUSION**

Hand K files induced minimal dentinal defects when compared to rotary files. Among the rotary files Mtwo files induced minimal dentinal defects when compared to K3XF files.

### **KEY WORDS**

Dentinal defects, Ni-Ti rotary files, hand K files, rotary Mtwo files, rotary K3XF files, Stereomicroscope.