

# THE TIME DURATION OF INSTRUMENTATION WITH PROTAPER UNIVERSAL NITI HAND SYSTEM, PROTAPER NEXT NITI ROTARY SYSTEM AND PROTAPER GOLD ROTARY SYSTEM

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**Introduction:** ProTaper systems are the most used in endodontic instrumentations. They have rotary and hand systems that create adequate cone form of mechanically treated root canal.

**Aim:** The aim of this study was to calculate the incidence of time that we spent when we instrument the root canal of single rooted teeth with different systems.

**Material and methods:** This study was conducted in September, in University Goce Delcev Stip, R. N. Macedonia. Thirty human extracted tooth were selected and kept in distilled water. Inclusion and exclusion criteria were used. Specimens with straight roots, single rooted and single canal were included in this study. Tooth with fracture lines, open apices, anatomic irregularities, calcified canal or multiple canals were discarded. The working length of the canals was determined by inserting a size #10 K file in the root canal, until the tip of the file was visible at the apical foramen and then we bring back 1 mm from the measurement. Also, the glide path was performed with the same size of this hand instrument. Then specimens preparation was made. The crowns were removed 2 mm above the proximal cemento-enamel junction.

The irrigation was with 2% solution of sodium hypochlorite, chlorhexidine gluconate 3% and 17% of EDTA. We spent same time to irrigate the specimens. The specimens were randomly divided into 3 equal groups (n=10) and were subsequently prepared using hand or rotary system.

Group 1: (n=10) NiTi hand instruments: specimens instrumented with NiTi ProTaper Universal hand system

Group 2: (n=10) NiTi rotary instrument: specimens instrumented with NiTi ProTaper Next rotary system

Group 3: (n=10) NiTi rotary instruments: specimens instrumented with NiTi ProTaper Gold rotary system



Figure 1: NiTi Pro Taper Universal hand system



Figure 2: NiTi Pro Taper Gold rotary system

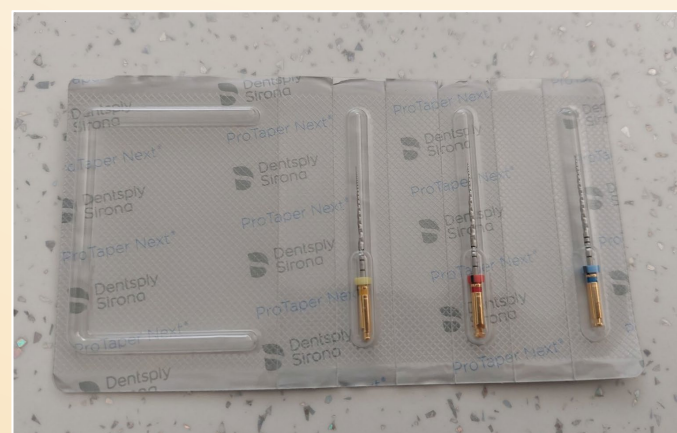


Figure 3: NiTi Pro Taper Next rotary system

**Results:** When we instrumented with the hand system we spent 18 minutes in average, when we instrumented with Pro Taper Gold rotary system we spent 14 minutes and with the Pro Taper Next system 9 minutes.



Figure 4: Endomotor

**Discussion:** About the time, we spent more time to instrument with Pro Taper Gold than Pro Taper Next NiTi rotary system. The longest time we spent was with NiTi ProTaper Universal hand system.

**Conclusion:** There was no significant difference found, when we compared the instrumentation between NiTi ProTaper Universal hand system, NiTi Pro Taper Next rotary system group and NiTi ProTaper Gold rotary system group. We think that the time duration is related to number of instruments from the system that we use during instrumentation. For example, the system of ProTaper Gold has 6 different sizes of instrument in compare to system of ProTaper Next that has 3 sizes. Also, we spent more time for calibration on every instrument (on the endomotor) of the system. So, the time duration for instrumentation with ProTaper Gold is longer than ProTaper Next. There is a need for further research to complete the whole image for this problem.

**Conflict of interest:** None