

COMPARATIVE EVALUATION OF INSTRUMENTATION TIME BETWEEN HAND K-FILES AND ROTARY KEDO-S FILES IN PRIMARY MANDIBULAR MOLARS

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ABSTRACT

Aim: To compare instrumentation time between Hand K-files and Rotary Kedo-S files in primary mandibular molars. **Method:** A randomized clinical trial was carried on 30 patient aged between of 4–8 years requiring pulpectomy in primary mandibular molars. Patients were equal distributed for instrumentation with Hand K files and Rotary Kedo-S files. **Results:** The mean instrumentation time observed for instrumentation with Rotary Kedo-S files is 9.40 ± 0.53 min. The mean instrumentation time observed for instrumentation with Hand K-file is 13.01 ± 0.85 . **Conclusion:** The instrumentation time with Rotary Kedo-S files was significantly less as compared to Hand K-file instrumentation.

KEYWORDS: Pulpectomy, Rotary endodontics, Kedo-S file, K file.

INTRODUCTION

Primary teeth act as a natural space maintainer and guide the eruption of permanent teeth to their optimal position in the dental arch. The retention and preservation of the primary tooth in the dental arch in its normal function and free of pathology is of utmost importance. Literature suggests that preserving the integrity of primary dentition will aid in mastication, prevent aberrant tongue movement, prevent speech problems, maintains esthetics, prevents psychological effects associated with tooth loss, and maintains the normal eruption of the succedaneous teeth.^[1] The goal of pulp therapy in the primary dentition is to retain the primary tooth as a fully functional part of the dentition, allowing at the same time for mastication, phonation, swallowing, and the preservation of the space required for the eruption of the permanent tooth.^[2] The premature loss of primary teeth may cause changes in the chronology and sequence of the eruption of permanent teeth.^[3]

The treatment options available in cases of advanced pulpal degeneration that affects radicular pulp tissue are extraction and pulpectomy. Pulpectomy technique is

considered over extraction since the successfully treated teeth can be retained in a non-pathologic state until they exfoliate.^[4]

According to the guidelines of the American Academy of Pediatric Dentistry, pulpectomy is indicated in primary teeth with carious pulp exposures in which, following coronal pulp amputation, the radicular pulp exhibits clinical signs of hyperemia or evidence of necrosis of the radicular pulp with or without caries involvement.^[5] The success of pulpectomy is greatly determined by the biomechanical preparation.^[6] The presence of accessory foramina in the furcation and ectopic root resorption makes cleaning and shaping of primary root canals more difficult.^[7]

Conventionally, hand files are used for cleaning and shaping and are time consuming. The length of the appointment is strongly associated with the child's behaviour.^[8] Barr et al. was the first to use rotary NiTi files for primary root canal preparation. They reported that use of NiTi files for root canal preparation in primary teeth was cost-effective, faster, and resulted in

uniform and predictable fillings. Investigators have evaluated various root canal systems and compared the efficacy of instrumentation between the hand and rotary files.^[9] Hence, the present study aims to comparatively evaluate the instrumentation timing using Hand (K- File) with Rotary (Kedo – S files) in primary mandibular molars.

METHODOLOGY

Present randomized clinical trial was carried out in the Department of Pedodontics and Preventive Dentistry after receiving approval institutional ethical committee. The informed written consent was obtained from the parents of the children who were willing to participate in the study. 30 children aged between of 4–8 years requiring pulpectomy in primary mandibular molars were randomly allotted in two equal groups.

The selection of the children was based on the following criteria: (a) vital or nonvital mandibular primary molars without sinus tract, (b) absence of internal or external pathologic root resorption, (c) presence of adequate coronal tooth structure to receive SS crown. The children lacking cooperative ability, children with underlying systemic diseases, and children with special health care needs were excluded from the study. All the procedures were done by a single operator. After confirmation of the diagnosis, local anesthesia was administered using 2% lignocaine with 1:200,000 adrenaline. Using a round carbide bur in a high speed handpiece, the superficial caries and roof of the pulp chamber were removed. Coronal pulp amputation was done with spoon excavator. No. 10 size K file was used to determine the patency of the canals. The working length was determined with radiograph and was kept one mm short of the apex.

The canal preparation was done using.

Group 1: Hand K file- hand instrumentation was carried out using hand K-file (Dentsply Maillefer, USA) up to no 35 K-file using quarter turn and pull motion.

Group 2: Rotary Kedo S file- Rotary instrumentation was preceded by initial hand instrumentation up to no 20 K-file. The rotary instrumentation was done using the Kedo-S rotary files (Reeganz dental care Pvt. Ltd, India) for primary teeth with D1 and E1.

The total instrumentation time was measured using a digital stopwatch. The timer was started with the introduction of the first file and stopped at the final saline irrigation. The canals were then irrigated with saline and sodium hypochlorite and dried using sterile paper points. The obturation was done using combination of calcium hydroxide and iodoform paste by gently pushing with cotton pellets. The glass ionomer cement was given as the post obturation filling. The pulpectomy treated teeth were restored with SS crowns either on the same day or in the next appointment. The data were entered over a spreadsheet, and statistical analysis was performed using SPSS software version 17 (IBM, Chicago, United States).

RESULTS

In present study total 30 children were enrolled. With respect to the mean instrumentation time observed for rotary Kedo-S files was 9.40 min with a standard deviation of 0.53. The mean instrumentation time observed for Hand K-file was 13.01 min with a standard deviation of 0.85. Results of unpaired *t*-test shows that the mean instrumentation time between the two groups reveal a statistically significant result of rotary Kedo-S files showing less instrumentation time as compared to K-file ($P < 0.001$). (Table no: 1)

Table no 1: Comparison of instrumentation time between Hand K file and Kedo -S file

Group	N	Mean instrumentation time	P Value
Group I (Hand K File)	15	13.01±0.85	< 0.001
Group II (Rotary Kedo-S file)	15	9.40±0.53	

DISCUSSION

The present study compared the instrumentation time of Hand K files and Rotary Kedo S file in the preparation of primary molars. The success of an endodontic procedure depends on an effective mechanical debridement and obturation quality.^[10] Although manual instrumentation is widely used in primary teeth, there are limitations regarding effective cleaning of root canals, possible ledge formation, perforations, dentine compaction, and instrument fracture.^[10] Result of present is study in accordance to the study conducted by Panchal V et al. (2019).^[11] Rotary instrumentation reduces manual dexterity, thereby increasing the efficiency of the operator. This can be the possible reason for reduced instrumentation time. The present rotary system uses a progressively increasing taper. This aids in the adaptation of files to the primary canal curvature, rather

than increased zipping and transportation as in stainless steel hand instrumentation.^[11]

CONCLUSION

The instrumentation time with Rotary Kedo-S files was significantly less as compared to Hand K-file instrumentation. It can be used as advanced alternative to the existing conventional K hand files.

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