

# INPLASY

## The effect of single file and multifile ROTARY file systems on ANTIBACTERIAL effect

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### ADMINISTRATIVE INFORMATION

**Support** - Cleveland Dental Institute.

**Review Stage at time of this submission** - Data extraction.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202450137

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 May 2024 and was last updated on 29 May 2024.

## INTRODUCTION

**Review question / Objective** This Systematic review will search for clinical evidence supporting the superiority of one shaping rotary technique over the others.

Is there evidence that one shaping system of root canals is superior to the others in eradicating microorganisms from root canals?

Conduct a comprehensive search using various databases and cited references to identify and collect current, clinically relevant reports related to the decrease in bacterial organisms in the root canal system after different shaping techniques.

**Rationale** Reduction of microorganisms is one of the most relevant and critical aspects of root canal therapy. Knowing the best preparation technique will lead to better root canal treatment and the welfare of the patients.

**Condition being studied** Reduction of microorganisms is one of the most relevant and critical aspects of root canal therapy. Knowing the best preparation technique will lead to better root canal treatment and the welfare of the patients. Such conditions can be apical periodontitis, apical abscess, etc.

## METHODS

**Search strategy** A comprehensive search will be conducted using 4 electronic credible databases to identify articles related to antibacterial effects and the methods and materials used to achieve these effects in root canal systems.

The databases included are: Google Scholar, PubMed, SCOPUS, EBSCO HOST, and Cochrane Library.

The search strategy will include these keywords:

- “Antibacterial effect OR Hand file OR Rotary system”
- “Antibacterial effect AND root canal systems”
- “Antibacterial effect AND Single file system”
- “Antibacterial effect AND Rotary systems”
- “Antibacterial effect AND Multi file rotary systems”
- “Antibacterial effect AND Hand file preparation”
- “Rotary AND Hand file AND Antibacterial”

To ensure current and relevant evidence, articles must have been published from 1970 to 2023.

**Participant or population** Patients coming into clinic or facility. Teeth from these patients that meet requirements for inclusion criteria.

**Intervention** Rotary single NiTi systems.

**Comparator** Rotary multifile NiTi systems.

**Study designs to be included** Systematic Review/ Meta-Analysis, randomized control trial.

**Eligibility criteria** The inclusion criteria consisted of teeth with a single root and a single canal presenting with a carious lesion with intact pulp chamber walls, necrotic pulp clinically confirmed by pulpal sensitivity tests, and clinical and radiographic evidence of primary apical periodontitis. The exclusion criteria were teeth with extensive crown destruction by caries that did not permit rubber dam placement, presence of root or crown fracture, teeth subjected to previous endodontic treatment, symptomatic teeth, patients who received antibiotic therapy in the last 3 months, and patients with periodontal pockets deeper than 4 mm.

**Information sources** Google Scholar, PubMed, SCOPUS, EBSCO HOST, and Cochrane Library. Published articles from Endodontic and scientific journals.

**Main outcome(s)** Primary outcomes – Reduction of microorganisms in the root canal system.

**Data management** Data will be stored in secure database with password protection.

**Quality assessment / Risk of bias analysis** Quality of assessment will be done using Cochrane 2.0 risk of bias system.

**Strategy of data synthesis** Data will analyzed using different programs that are used to analyze data for scientific research.

**Subgroup analysis** Analysis for subgroups will be done accordingly.

**Sensitivity analysis** Sensitivity analysis will be done according to the appropriate measures using through the research committee.

**Language restriction** Only english.

**Country(ies) involved** United States of America, and affiliation with other countries as needed.

**Other relevant information** Ethical considerations in the quality, relevance, and value of the evidence and data found within the published articles will be utilized in the conduction of this review. Funding of the study will be through Cleveland Dental Institute.

**Keywords** Antibacterial effect OR Hand file OR Rotary system, Antibacterial effect AND root canal systems, Antibacterial effect AND Single file system Antibacterial.

#### **Contributions of each author**

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