

INPLASY

The Effect of Manual Preparation, Single File, and Rotary File systems on the success rate

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ADMINISTRATIVE INFORMATION

Support - Cleveland Dental Institute.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023120057

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 December 2023 and was last updated on 13 December 2023.

INTRODUCTION

Review question / Objective Evaluate the success after root canal treatment when hand instruments, rotary NiTi files, and single NiTi files are used in the preparation of root canals.

Rationale This systemic review will be carried out to compare the effect of shaping the canals with single rotary file systems, multiple rotary file systems, and hand files on the success of root canal treatment. To determine the preparation technique which will allow a higher success of root canal treatment.

Condition being studied o Studies done only on permanent teeth over the age of eighteen.
o Studies with retreatment will be excluded.

o Studies show the significance of the single file technique over rotary systems.
o Studies show the significance of manual techniques over other techniques.
o Studies are done in diverse populations all over the world irrespective of gender.
o Studies using the same standard of care material like irrigation solution and obturation techniques..

METHODS

Search strategy Comprehensive searches will be conducted across PubMed, Scopus, Web of Science, and Cochrane Library using specific keywords. Inclusion criteria will encompass both randomized controlled trials and observational studies that reported comparable outcomes for the mentioned systems. Extracted data will include study design, sample size, instrumentation used, pain measurement scale, and key findings.

Quality assessment and data synthesis will be performed using PRISMA guidelines and RevMan software, respectively.

Participant or population Systematic review and meta analysis , which include other studies already done in vivo.

Intervention Rotary NiTi Files including single file system.

Comparator Manual preparation and rotary file preparation.

Study designs to be included Systematic review and meta analysis.

Eligibility criteria

- o Studies done only on permanent teeth over the age of eighteen.
- o Studies with retreatment will be excluded.
- o Studies show the significance of the single file technique over rotary systems.
- o Studies show the significance of manual techniques over other techniques.
- o Studies are done in diverse populations all over the world irrespective of gender.
- o Studies using the same standard of care material like irrigation solution and obturation techniques.

Information sources pubmed, Scopus, web of science, cochrane library.

Main outcome(s) Compared success of root canal treatment with rotary single niti file and hand file.

Data management Data would be analyzed. as per meta analysis Protocol.

Quality assessment / Risk of bias analysis
Quality assessment and data synthesis will be performed using PRISMA guidelines and RevMan software, respectively.

Strategy of data synthesis Extracted data will include study design, sample size, instrumentation used, pain measurement scale, and key findings.

Subgroup analysis Systematic review and meta analysis as protocol would be followed.

Sensitivity analysis Findings. Quality assessment and data synthesis will be performed using PRISMA guidelines and RevMan software, respectively.

Language restriction All research studies and communication will be in English.

Country(ies) involved United States.

Other relevant information Question: Did the introduction of the Nickel titanium rotary instruments improved the success of root canal treatment than manual preparation?
Time- Studies published between 1970-2023
Setting- Cleveland Dental Institute, OH, USA.

Keywords Manual preparation Single file Rotary file Post treatment symptoms PRISMA Hand files NiTi files Post operative pain Success Preparation Niti.

Dissemination plans The study will be submitted to reputed endodontic journal for dissemination.

Contributions of each author

Author 1 - Sora Obead - Carefully read the peer-review report; Select articles to be added to the data pool; Assist other authors in the manuscript writing and finalizing draft.

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Author 2 - Dhawal Raj Canchi - Carefully read the peer-review report. Review articles and have it added to the data pool for all the reviewers. Drafting and finalizing the protocol of the study. Data management and finalizing manuscript.

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Author 3 - Itisha Patel - Carefully read the peer-review report. Statistical analysis of the data. Assist other authors to finalize manuscript.

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