39th IACDE National Conference

COMPARATIVE ANALYSIS OF VARIOUS ROTARY AND RECIPROCATING RETREATMENT FILE SYSTEMS - AN UMBRELLA REVIEW

OBJECTIVE

The goal of this comprehensive research is to help clinicians make decisions about which form of kinematics is safer and more effective by comparing the removal capabilities of rotary and reciprocating kinematics from root canals.

INTRODUCTION

Retreatment is defines as "therapy of the same disease in a patient , with the same agent or procedure repeated after initial treatment or with an additional or alternate measure or follow up in the medical subject headings of the National Library of Medicine".

One of the main objectives of secondary root canal therapy is to remove old filling material from the root canals so that cleaning and shaping can occur inside the apical constriction.

This process eliminates microorganisms from the root canals and raises the success rate of secondary root canal therapy.`

The terms retreatment systems (d-race, m-two, protaper, r-endo) and reciprocating systems (reciproc, reciproc blue ,wave one , waveone gold) were utilized .

MATERIALS AND METHODS

INCLUSION CRITERIA:

Inclusion criteria for the selection of articles were:

1.Articles published after the year 2013 were used.

2.The studies must be conducted in vitro or vivo environment.

3.The samples must be standardized such as root canal curvature and fully formed root apex.

4.The studies must be necessarily on the comparison between retreatment and reciprocating systems: the prescence or abscence of other systems is not of importance.

5.The studies must be carried out employing at least one retreatmnet system with continous motion and one reciprocating system with adaptive motion.

6. The articles must be written in English.

EXCLUSION CRITERIA:

The exclusion criteria for the selection of the articles were :

1.Articles with the publication date prior to 2013 were excluded.

2.Articles in which artificial teeth were used as the samples were excluded.

3.Case reports, studies conducted on animals were excluded.

he umbrella review was developed according to thr Prefered Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

INCLUSION AND EXCLUSION CRITERIA:

he inclusion criteria were systemic evaluations with or without meta-analysis that assessed any variations in the effectiveness of various rotary and reciprocating files.

he exclusion criteria were: case reports, clinical studies , lab investigations , animal studies and narrative reviews.

METHODOLOGY

IDENTIFICATION

Pubmed and Google-Records identified through database searching (n=156)
Additional records (JOE,IEJ) :- Identified through other sources (n=41)

ELIGIBILITY

Records selected during initial analysis (n=197)

Records excluded after duplicates (n=68)

Articles excluded based on language,publication date and title searched (n=129)

SCREENING

Records excluded after abstract evaluation (n=79)

Studies selected for eligibility and full text analysis (n=50)

INCLUDED

Studies excluded after full text analysis (n=45)

Studies included in the umbrella review fulfilling the inclusion criteria (n=5)

RESULTS

FEDELE ET.AL. — ROTARY - PROTAPER UNIVERSAL, PROFILE, D-RACE,R-ENDO,TRU SHAPERECIPROCATING RECIPROC, WAVE ONE	JOE 2016	ROTARY AND RECIPROCATING SYSTEMS EXHIBIT SIMILAR ABILITIES IN REMOVING ROOT CANAL FILLING MATERIAL
NASIRI ET AL — ROTARY- PROTAPER, D- RACE , M-TWO RECIPROCATING -RECIPROC,RECIPROC BLUE, WAVEONE, WAVEONE GOLD	DENTAL,ORAL AND MAXILLOFACIAL RESEARCH 2020	NEITHER ROTARY NOR RECIPROCATING RETREATMENT SYSTEMS COULD COMPLETELY REMOVE ROOT CANAL FILLING MATERIALS
BHUJBAL ET AL — ROTARY-PROTAPER RECIPROCATING- WAVEONE	JOURNAL OF CRITICAL REVIEWS 2021	BOTH ROTARY AND RECIPROCATING SYSTEMS PROVE EFFECTIVE IN REMOVING ROOT CANAL FILLING MATERIAL. NONE OF THEM IS SUPERIOR
SIMOSE ET AL — ROTARY - PROTAPER,ONE FLARE,PROFILE,M-TWO,R-ENDO RECIPROCATING - RECIPROC, RECIPROC BLUE, WAVEONE GOLD	JOURNAL OF RESTORATIVE DENTISTRY AND ENDODONTICS 2022	The type of kinematics(rotary or reciprocating) does not influence the efficacy of root canal filling material removal from root canals.
BUCHELI ET AL — ROTARY-PROTAPER,M-TWO RECIPROCATING-RECIPROC,WAVEONE	JOURNAL OF RESTORATIVE DENTISTRY AND ENDODONTICS 2022	None of the reviewed systems is effective to completely remove the filling materials from straight root canals and all systems appear to be equally time efficient

CONCLUSION

This umbrella review found that while various techniques can be applied to efficiently remove root canal filling materials, they cannot be removed entirely. Less leftover material is linked to hybrid approaches and larger preparation sizes. Comparing NiTi retreatment files to traditional methods reveals no advantages. The capacities of reciprocating and continuous rotational systems to remove root canal filling material are comparable.

It is possible to infer that all of the systems can be utilized for secondary root canal therapy given the constraints of this evaluation and the data gathered. In curved root canals, removal of the root canal filling is successful regardless of the kind of kinematics- rotary or reciprocating - based on the standard data from this examination.

Moreover, additional clinical and laboratory experiments are needed to assess the effectiveness of reciprocating motion and continuous motion systems in minimizing the amount of filling material remaining in root canals after retreatment.