INPLASY

Does the use of blood clot or other different scaffold materials have an impact on the therapeutic effect of regenerative endodontic procedures? a systematic evaluation and meta-analysis

Yang, F[1]; Yu, LT[2]; Wang, J[3].

Corresponding author:
Feng Yang

ryanyang0810@163.com

Author Affiliation:
Department of Pediatric Dentistry, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine & College of Stomatology, Shanghai Jiao Tong University & National Center for Stomatology & National Clinical Research Center for Oral Diseases & Shanghai Key Laboratory of Stomatology &Shanghai Institute of Stomatology, Shanghai 200011, China.

ADMINISTRATIVE INFORMATION

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 January 2024 and was last updated on 17 January 2024.

INTRODUCTION

*R*eview question / Objective To compare the therapeutic effects of BC with exogenous scaffolds in regenerative endodontic procedures.

Condition being studied Different scaffold materials have their own advantages and disadvantages. The blood clot is most traditional and most popular in regenerative endodontics procedures. It was reported to be related to a high success rate, simplicity, economy, and no allergic reaction. However, a BC might not induce true pulp-dentin complex regeneration. PRP is a first-generation autologous platelet concentrate (APC) rich in growth factors obtained by centrifugation of autologous whole blood. Platelets in PRP release important growth factors, including vascular endothelial growth factor (VEGF), platelet-derived growth factor (PDGF), fibroblast growth factor (FGF), and epidermal growth factor (EGF). Some research results suggest that PRP induces regeneration of periodontal tissue rather than dental pulp tissue.

METHODS

Participant or population Patients with pulp necrosis of young permanent teeth.

Intervention The use of exogenous scaffolds (alone or combined with BC) for regenerative endodontic procedures.

Comparator Self-applied BC alone for regenerative endodontic procedures.

Study designs to be included Randomized controlled trials.

Eligibility criteria The studies should include the detailed description of outcomes of interest, such as pulp response, periapical healing, root lengthening, canal wall thickening, and apical closure.

Information sources PubMed, the Cochrane Central Register of Controlled Trials (CENTRAL), Embase and Google Scholar.

Main outcome(s) (1) Overall success rate (2) The amount of increase in tooth root length (3) The amount of increase in root canal wall thickness,

Quality assessment / Risk of bias analysis The Cochrane risk of bias tool (V 1.0) was used to assess the ROB of the included studies. The tool addresses seven key domains: sequence generation, allocation concealment, blinding of participants and personnel, blinding of assessment, incomplete outcome data, selective reporting, and other biases. Two reviewers (F.Y. and T.Y.) independently performed assessments of all the included studies, and each domain was assessed and given a risk of bias rating of "high," "low," or "unclear." All discrepancies were resolved by discussion with two experts (J.W. and K.S.).

Strategy of data synthesis We analyzed risk ratios (RRs) and mean differences (MDs) for dichotomous data and continuous data, respectively, together with their corresponding 95% confidence intervals (CIs). Data synthesis was performed using Review Manager software (RevMan 5.4. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration). Pooled data were analyzed using a random-effects model, as the CI of the mean effect sizes was wider than that obtained from the fixed-effects model, allowing for a more conservative interpretation.

Subgroup analysis If possible, subgroup analyses will be conducted to explore possible sources of heterogeneity. We will try to perform subgroup analyses based on the following group distinctions: 1. Length of follow-up. 2. the age of patients.

Sensitivity analysis For the main meta-analyses of the increment of root length and canal wall thickness, we proposed two forms of sensitivity analysis: removing studies with the shortest observational follow-up period (12 months or less) and removing studies classified as missing standard deviations. We conducted these meta-analyses using a random effects model.

Country(ies) involved China.

Contributions of each author
Author 1 - Feng Yang.
Author 2 - Lintong Yu.
Author 3 - Jun Wang.