

ORIGINAL ARTICLE

METHODOLOGICAL QUALITY ASSESSMENT OF SYSTEMATIC REVIEWS ON AUTOLOGOUS PLATELET CONCENTRATES FOR THE TREATMENT OF PERIODONTAL DEFECTS



MASSIMO DEL FABBRO, MSc, PhD^{a,b,1}, ALESSANDRA LOLATO, MSc, PhD^{a,b,1}, SAURAV PANDA, MDS^c, STEFANO CORBELLA, DDS, PhD^{a,b}, ANURAG SATPATHY, MDS^c, ABHAYA CHANDRADAS, MDS^c, MANOJ KUMAR, MDS^c, AND SILVIO TASCHIERI, MD, DDS^{a,b}

^aDipartimento di Scienze Biomediche, Chirurgiche e Odontoiatriche, Università degli Studi di Milano, Milan, Italy

^bIRCCS Istituto Ortopedico Galeazzi, Milan, Italy

^cDepartment of Periodontia, Institute of Dental Sciences, Shiksha 'O' Anusandhan University, Bhubaneswar, Odisha, India

ABSTRACT

Objectives

Evaluation of the methodological quality of systematic reviews (SRs) on the effectiveness of autologous platelet concentrates as an adjunct to regenerative procedures for the treatment of periodontal defects.

Material and Methods

After a literature screening, eligible SRs were qualitatively assessed using 2 validated instruments: A Measurement Tool to Assess systematic Reviews checklist and Overview Quality Assessment Questionnaire. The characteristics and findings of SRs were also reported.

Results

Ten SRs fulfilled the inclusion criteria and were evaluated. With A Measurement Tool to Assess systematic Reviews tool, SRs displayed a generally satisfying quality. Six SRs satisfied ≥ 8 items of 11 (high-quality score), and 4 were classified of medium quality (score 4-7). Using Overview Quality Assessment Questionnaire instrument, more than half SRs ($N = 6$) satisfied ≥ 7 items of 9, resulting to be of high quality; 3 were classified as medium quality (4-6 criteria met); and only 1 of low quality (3 items satisfied). A significant correlation between the results of the 2 questionnaires was found (Spearman's $r = 0.915$, $P = .0005$).

Conclusions

SRs considered had an overall high methodological quality. However, some areas were not systematically addressed, like a thorough research strategy or publication bias assessment. Standard guidelines for designing, performing, and reporting SRs should always be followed. The use of platelet concentrates as an adjunct to periodontal surgery procedures may have beneficial effects for the treatment of periodontal defects.

INTRODUCTION

Systematic reviews (SRs) and meta-analyses (MAs) of randomized controlled trials occupy the highest position in the pyramid of evidence.^{1,2} SRs answer a defined research question by collecting and summarizing the existing data on the

CORRESPONDING AUTHOR:

Massimo Del Fabbro, Dipartimento di Scienze Biomediche, Chirurgiche e Odontoiatriche, Università degli Studi di Milano, IRCCS Istituto Ortopedico Galeazzi, Via Riccardo Galeazzi 4, 20161, Milano, Italy. Tel.: +39 02 50319950; fax: +39 02 50319960. E-mail: massimo.delfabbro@unimi.it

KEYWORDS

Systematic review, Periodontal disease, Platelet-rich plasma, Evidence-based dentistry, Quality assessment

¹These 2 authors equally contributed to the study.

Conflict of Interest: The authors have no actual or potential conflicts of interest.

Received 2 November 2016; revised 12 April 2017; accepted 12 April 2017

J Evid Base Dent Pract 2017; [239-255] 1532-3382/\$36.00

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doi: <http://dx.doi.org/10.1016/j.jebdp.2017.04.006>

effects of treatment or intervention from studies that fits with predefined eligibility criteria. SRs differ from other types of reviews because they are thoroughly and rigorously conducted to identify and evaluate the existing evidence.² The findings and recommendations, coming from the SRs and MA, should guide the clinical practice to make daily decisions regarding treatments. Therefore, well-designed SRs of high methodological quality are a fundamental prerequisite for the clinical decision-making process. The way a SR is conducted and reported significantly influences the findings and thus the recommendations for the clinicians. Quality of a SR can be defined as the likelihood that the design of a SR will produce unbiased results.³ The quality of systematic reviews can be critically and reproducibly assessed using specific grading instruments. The Overview Quality Assessment Questionnaire (OQAQ)⁴ and A MeaSurement Tool to Assess systematic Reviews checklist (AMSTAR)⁵ are validated tools that are specifically developed for grading the quality of the reviews.

To date, in the dental field, few studies have been published on the assessment of the quality of SRs using these established guidelines.⁶⁻¹⁴ In addition, an exiguous number of these type of studies has been conducted in the medical field.¹⁵⁻²³

The actual benefits of autologous hemocomponents rich in growth factors, which are blood-derived preparations containing a high concentration of platelets, used as an adjunct to surgical procedures to enhance tissue healing, are a very debated and controversial topic. In the last years, several SRs and MA examined the effect of autologous platelet concentrates (APCs) in the treatment of periodontal defects.²⁴⁻³⁶ However, at the moment, studies assessing how these reviews have been conducted and reported, which may affect the strength of the final clinical recommendations, have not been performed yet.

Therefore, the present review had the aim to (1) systematically identify all the published SRs that had evaluated the effectiveness of APCs in the treatment of periodontal infrabony defects, gingival recession, and furcation defects compared with other regenerative procedures and (2) evaluate their methodological quality using 2 standard checklists (OQAQ and AMSTAR).

MATERIALS AND METHODS

Research Question, Data Sources, and Search Strategy

The following research question was addressed: "What is the level and quality of the available evidence on the adjunctive use of APCs for the treatment of periodontal defects?" A literature search was performed in electronic databases (PubMed, Embase, and SCOPUS) using the following search string: (((((((((autologous platelet

concentrates) OR platelet rich plasma) OR PRP) OR platelet rich fibrin) OR PRF) OR platelet rich in growth factors) OR prgf) OR blood) OR coagulation) OR fibrin sealants)) AND (((((((chronic periodontitis) OR periodontal disease) OR intrabony defects) OR furcation defects) OR intrabony defects) OR gingival recession) OR periodontal defects). Searches were limited to SRs without language and time restrictions. The last search was performed on March 9, 2016. In addition, the following search terms alone and in combination using Boolean operators were used by means of Database of Abstracts of Reviews of Effects (DARE): "periodontal" and "platelet" and "review."

Two reviewers (A.L. and S.P.) independently scanned the literature to identify the eligible articles, and in case of disagreements on the selection process, a consensus was reached through discussion. An additional hand search was carried out on the main international journals in the field of dentistry and oral and maxillofacial surgery: *British Dental Journal*, *British Journal of Oral and Maxillofacial Surgery*, *Clinical Implant Dentistry and Related Research*, *Clinical Oral Implants Research*, *Clinical Oral Investigations*, *European Journal of Oral Implantology*, *European Journal of Oral Sciences*, *Implant Dentistry*, *International Journal of Oral and Maxillofacial Implants*, *International Journal of Oral and Maxillofacial Surgery*, *International Journal of Periodontics and Restorative Dentistry*, *Journal of Clinical Periodontology*, *Journal of Dental Research*, *Journal of Dentistry*, *Journal of Maxillofacial & Oral Surgery*, *Journal of Oral and Maxillofacial Surgery*, *Journal of Periodontal Research*, *Journal of Periodontology*, *Oral Surgery Oral Medicine Oral Pathology Oral Radiology and Endodontology*. Issues published from 2005 to March 2016 were searched. The reference lists of the identified SRs were also checked for possible additional studies.

Inclusion and Exclusion Selection Criteria

Only SRs investigating the efficacy of APCs in the treatment of periodontal infrabony defects, gingival recession, and furcations were included in the present SR. Reviews were defined as systematic if an explicit and repeatable method for searching the literature was reported. In addition, explicit and clear inclusion and exclusion criteria for study selection had to be adopted. SRs were considered to be eligible if they evaluated the effect of any type of APCs, either alone or in conjunction with other regenerative procedures in the treatment of infrabony defects, gingival recession, and/or furcation defects.

SRs that evaluated the efficacy of nonautologous growth factors (ie, recombinant growth factors) in the surgical treatment of periodontal defects were excluded. Any other type of reviews (ie, non-SRs, overviews, and reviews of nonclinical investigations) that did not screen systematically the literature according to rigorous protocol was not considered.

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