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Background

Periodontal diseases are chronic disease which is largely preventable. It is a condition whereby tooth-supporting tissues (gingiva, alveolar bone, periodontal ligament, and cementum) are affected by bacterial infection. Direct two-way communication between oral and soft tissue through junctional epithelium providing a pathway for bacterial ingress, thus giving potential for adverse effects on oral health. Conventional treatment of periodontal disease (scaling and root debridement, open flap surgery for access of debridement procedure) may arrest bone destruction but usually does not restore the lost alveolar bone or periodontal connective tissue. The bone deformities resulted from periodontitis can be reconstructed or regenerated in regenerative procedures which involves multiple techniques and accurate selection of autogenous grafts or using bone substitutes available in the market. Bone substitutes derived from another human, synthetic or animal are considered as foreign bodies, thus will create an immune reaction during healing process post operatively. Autologous platelet concentrates (APC) which contains platelet rich plasma (PRP), platelet-rich fibrin (PRF) and concentrated growth factor (CGF) has gained interest as an adjunctive to all procedures described in the treatment of periodontal diseases.

Objective

To identify and evaluate evidence on effectiveness, safety, organisational aspects, and economic implication related to platelet rich plasma (PRP), platelet – rich fibrin (PRF) and concentrated growth factor (CGF) for periodontal therapy.

Methods

A systematic review was conducted. Review protocol and search strategy was developed by the main author and *Information Specialist*. The following electronic databases were searched through the Ovid interface: Ovid MEDLINE® In-Process & Other Non-Indexed Citations and Ovid MEDLINE® 1946 to 13th November 2020, EBM Reviews - Health Technology Assessment (4th Quarter 2016), EBM Reviews - Cochrane Database of Systematic Review (2005 to 13th November 2020), EBM Reviews - Cochrane Central Register of Controlled Trials (October 2020), EBM Reviews – Database of Abstracts of Review of Effects (1st Quarter 2016), and EBM Reviews - NHS Economic Evaluation Database (1st Quarter 2016). Parallel searches were run in PubMed, US FDA and INAHTA database. No limits were applied to the search. Additional articles were identified from reviewing the references of retrieved articles. The last search was performed on 3th March 2021.

Results and conclusion:

A total of 306 records were identified through the Ovid Medline and PubMed interfaces, and five were identified from other sources. The review included seven systematic reviews with meta-analysis. The included articles were published between 2016 and 2019. Most of the studies were from multi-country.

Effectiveness

Based on the above review, there was fair level of retrievable evidence on the use of platelet rich plasma (PRP), platelet-rich fibrin (PRF) and concentrated growth factor (CGF) for periodontal therapy. Evidence demonstrated that (PRP), (PRF) and (CGF) as adjunctive

EXECUTIVE SUMMARY

(Adapted from the report by Dr. Parveen Thanabalen)

use for treatment of infrabony defects especially in open flap debridement and open flap debridement with bone graft were effective in reducing the pocket depth (PD) and improving the clinical attachment level (CAL) gainSafety

There was no retrievable evidence on safety of platelet rich plasma (PRP), platelet-rich fibrin (PRF) and concentrated growth factor (CGF) for periodontal therapy.

Economic evaluation/cost-effectiveness analysis

There was no retrievable evidence on cost-effectiveness analysis of platelet rich plasma (PRP), platelet-rich fibrin (PRF) and concentrated growth factor (CGF) for periodontal therapy.

Cost analysis conducted

Cost analysis showed that the estimated additional cost associated with the use of PRF or CGF treatment ranged from RM62 to RM 68 per patient per year. A decrease by at least one outpatient visits as reported would yield an estimate of MYR293 of potential cost saving per patient.