Evidence that full-mouth scaling superior to conventional treatment approaches is unclear

Abstracted from

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Full-mouth treatment modalities (within 24 hours) for chronic periodontitis in adults.

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Question: Should adults with chronic periodontitis have their treatment carried out within a 24-hour period?

Data sources The Cochrane Oral Health Group Trials Register, the Cochrane Central Register of Controlled Trials, Medline, Embase, CINAHL, the US National Institutes of Health Trials Register and the WHO Clinical Trials Registry Platform.

Study selection Randomised controlled trials (RCTs) with at least three months follow-up comparing full-mouth scaling and root planing within 24 hours with adjunctive use of an antiseptic such as chlorhexidine (FMD) or without the use of antiseptic (FMS), compared to conventional quadrant scaling and root planing (control).

Data extraction and synthesis Methodological guidelines of the Cochrane Collaboration were followed. Two review authors selected the papers and determined eligibility based on the titles and abstracts, and any disagreements were resolved by discussion. Four review authors carried out the data extraction. The characteristics of studies excluded at the full-text stage are described in detail. The Cochrane risk of bias tool was used to assess bias in the included studies. Tooth loss and changes in pocket probing depths were the primary outcome measures while attachment level and bleeding on probing were the secondary outcomes.

Results Twelve trials recruiting 389 participants were included. No studies assessed the primary outcome tooth loss. Ten trials compared FMS and control and there was no evidence for benefit of FMS in any of the outcome measures. Six trials were included in the meta-analysis comparing FMD and control, which did not reveal a benefit for FMD over conventional scaling and root planing. Three trials compared FMS and FMD and did not demonstrate a benefit of one over the other. The quality of evidence was assessed as 'low' due to study design limitations and the small number of trials and participants.

Conclusions From the 12 included trials there is no clear evidence that FMS or FMD provide additional benefit compared to conventional scaling and root planing. In practice, the decision to select one approach to non-surgical periodontal therapy over another should include patient preference and the convenience of the treatment schedule.

Commentary

It has long been established that plaque is the primary aetiological factor in periodontal disease.¹ It is estimated that 47% of people have periodontitis.² Treatment of periodontal disease aims to reduce the bacterial load and involves oral hygiene instruction with supra- and sub-gingival debridement of the crown and roots of teeth.³ This is usually carried out over multiple sessions spaced one to two weeks apart. There is a wealth of evidence to support the effectiveness of this approach⁴⁻⁶ and it remains the most popular approach today. The idea that periodontal pathogens from un-instrumented sites can re-colonise recently instrumented pockets brought about the concept of full-mouth treatment within 24 hours.⁷ Since then, there has been conflicting evidence produced about the efficacy of these full-mouth treatments over conventional scaling and root planing. Lang *et al.* produced a systematic review and meta-analysis following the 6th European Workshop in Periodontology. They found FMD and FMS had statistically significant benefits over conventional SRP in some pocket depth reductions and clinical attachment gains; however, these findings were inconsistent and were too small to be considered clinically relevant. They concluded all three treatment approaches could be recommended, as did two other reviews, published around the same time.^{9,10} In contrast, Teughels *et al.*¹¹ published a review which concluded one-stage full-mouth treatment approaches provide a significant clinical and microbiological improvement without any disadvantages or risks to the patient. However, this review did not provide any statistical analysis and was published by the same group from Leuven, Belgium, who produced the original studies and investigated one-stage full-mouth treatment modalities.

The aim of this Cochrane review was to update a previous review on this topic from 2008,¹² and to ensure the evidence for this question is up to date. This updated review includes an additional five studies on top of the seven originally included in 2008, giving a total of 12 RCTs for analysis. This review, being from the Cochrane Collaboration, is exhaustive in its nature. Their rigid methodological approaches to these reviews allow only studies that meet strict inclusion criteria to be included. They also include a detailed description of studies that were excluded at the full-text stage, which not all systematic reviewers do. The evidence suggests that while full-mouth treatment modalities are effective in the treatment of chronic periodontitis they provide no additional benefit over conventional scaling and root planing. This update does not change the conclusions of the original review. The overall quality of evidence was assessed as being 'low' due to design

This paper is based on a Cochrane Review published in the Cochrane Library 2015, issue 4 (see www.thecochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and the Cochrane Library should be consulted for the most recent version of the review.

limitations leading to a risk of bias, and the small number trials and participants.

The applicability of these results to clinical everyday practice could be judged to be unreliable due to the fact that all the trials were conducted in university dental departments. The authors concluded that the decision to select one approach over another should include patient preference and convenience of the schedule. However, according to Teughels *et al.*¹¹ there was better compliance and acceptability with the one-stage full-mouth approach, benefiting both the clinician and patient.

Conventional scaling and root planing remains the most proven treatment approach for chronic periodontitis and against which other treatment modalities will continue to be measured. Whether more research can establish if full-mouth treatment modalities can replace this traditional approach to treatment remains to be seen.

The authors of this review advise that further research would be beneficial, given the quality of evidence was assessed as low, however, there may be difficulty in achieving this. More trials with a larger number of participants are required. Longer follow-up periods are required to assess tooth loss (this being a primary outcome measure). However, the fact that supportive periodontal therapy begins soon after initial treatment means determining the long-term effects of the initial treatment modality may be challenging.

Some of the issues, which contributed to the high risk of bias in this review, may be simpler to correct. In this review seven trials did not report adequate information about random assignment, and three did not carry this out. Ensuring the participants are

randomly assigned to a treatment modality is important to provide allocation concealment and future research should endeavour to do this. Eberhard also suggests that further research should focus on the financial implications and patient burden of these modalities.

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