Full-mouth treatment versus quadrant root surface debridement in the treatment of chronic periodontitis: a systematic review

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CRD summary
Mechanical or non-surgical periodontal treatment was effective, but showed no difference in periodontal clinical outcome measures between full-mouth debridement and quadrant scaling and root planing. The authors' conclusions reflected the evidence presented, but due to the small number of studies and small sample sizes, the authors' conclusions should be interpreted with caution.

Authors' objectives
To compare the effectiveness of full-mouth treatment (disinfection or debridement) with quadrant scaling and root planing as treatments for chronic periodontitis.

Searching
MEDLINE, The Cochrane Library and EMBASE were searched until the end of 2007 for published articles in English. Search terms were reported. Reference lists of relevant studies were searched.

Study selection
Eligible studies were randomised controlled trials (RCTs) with a minimum six-months clinical follow-up at patient level that compared full-mouth treatment (full-mouth debridement or full-mouth disinfection) to conventional quadrant root planing in patients with chronic periodontitis who had no history of antibiotic use for three months prior to the start of the trial.

Patient demographic characteristics and smoking status varied between studies. Quadrant root surface debridement was carried out at either one- or two-week intervals. Outcomes of interests included reduction in probing pocket depth, probing attachment levels, bleeding probing and patient complications.

Two reviewers selected the studies for inclusion in the review. It was not reported how any disagreements were resolved.

Assessment of study quality
Study quality was assessed using four criteria: method of randomisation; allocation concealment; blindness of examiners; and completeness of follow-up. Based on how many criteria each study met, they were categorised into three groups: low risk of bias (all criteria met); moderate risk of bias (one or more criteria met partially); and high risk of bias (one or more criteria not met at all).

Two reviewers independently performed the validity assessment.

Data extraction
Data were extracted in order to calculate mean differences and 95% confidence intervals (CI). Authors were contacted for further data where necessary.

Two reviewers independently performed the data extraction. It was not reported how any disagreements were resolved.

Methods of synthesis
Where possible, weighted mean differences were combined in a random-effects model. A narrative synthesis was used for some comparisons. The authors stated that assessment of statistical heterogeneity and publication bias were not possible due to the limited number of included studies.
Results of the review
Seven RCTs were included in the meta-analysis (n=254 patients). Sample size ranged from 10 to 71 patients. Follow-up ranged from six to eight months. Three studies were considered low risk of bias, two studies moderate risk of bias and two were high risk of bias.

Full-mouth disinfection versus quadrant scaling and root planing (four studies): Meta-analysis was not performed. Full-mouth disinfection with chlorhexidine (three studies) was associated with a statistically significant reduction in probing depth for deep pockets (≥7mm) (one study), probing pocket depth for deep and moderate pockets (two studies), bleeding on probing (one study) and statistically significant clinical attachment gain (two studies). Full-mouth disinfection using povidone-iodine (one study) showed a statistically significant increase in the number of closed pockets (<5mm) compared to quadrant scaling and root planing.

Full-mouth disinfection versus full mouth debridement (three studies): Meta-analysis was not performed. All studies showed no statistically significant difference in clinical outcome measures between full-mouth disinfection compared with full-mouth debridement.

Full-mouth debridement versus quadrant scaling and root planing (three studies): Meta-analysis (three studies) showed that there was no significant difference in reduction of initially deep pockets (≥7mm) (mean difference 0.06mm, 95% CI -0.30 to 0.41) or of initially moderate pockets (5mm to 7mm) (mean difference 0.00mm, 95% CI -0.21 to 0.21) between full-mouth debridement and quadrant scaling and root planing. There was no significant difference in probing attachment level for initially deep pockets (mean difference 0.13mm, 95% CI -0.29 to 0.56) and of initially moderate pockets (mean difference 0.11mm, 95% CI -0.11 to 0.33) between full-mouth debridement and quadrant scaling and root planing. There was no significant difference in reduction of bleeding on probing. There was no evidence of statistically significant heterogeneity.

Patient complications: Two studies showed that higher levels of pain were experienced in the full-mouth group compared to the quadrant group. Two studies showed that a higher temperature was abusive in the full-mouth group. However, two further studies found no difference in pain or body temperature between the two groups.

Authors' conclusions
Mechanical or non-surgical periodontal treatment was effective, but showed no difference in the periodontal clinical outcome measures between full-mouth debridement and quadrant scaling and root planing.

CRD commentary
This review addressed a clear research question and was supported by detailed inclusion criteria. The search strategy was adequate. Only published studies in English were eligible for inclusion in the review, which meant that relevant studies may have been missed and that the review may be subject to publication and language biases. The validity assessment tool was appropriate for the included study design. Synthesis methods were appropriate. The review process was carried out with sufficient attempts to minimise reviewer error and bias. The authors’ conclusions reflected the evidence presented, but due to the small number of studies and small sample sizes, the authors’ conclusions should be interpreted with caution.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice
Research: The authors stated that RCTs with longer durations that adhered to an agreed standard protocol for both full-mouth disinfection and full-mouth debridement and had standard outcome measures were required. Further specific studies for full-mouth disinfection with chlorhexidine versus quadrant therapy and for patient complications following full-mouth debridement versus quadrant therapy were required.

Funding
Not stated.
Bibliographic details

PubMedID
18833208

DOI
10.1038/sj.bdj.2008.874

Original Paper URL

Indexing Status
Subject indexing assigned by NLM

MeSH
Anti-Infective Agents, Local /therapeutic use; Chronic Periodontitis /therapy; Episode of Care; Humans; Outcome and Process Assessment (Health Care); Patient Care Planning; Root Planing /methods; Time Factors

AccessionNumber
12009104641

Date bibliographic record published
05/08/2009

Date abstract record published
24/03/2010

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.