A systematic review of the prevalence of root sensitivity following periodontal therapy

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Authors' objectives
To determine the prevalence of root sensitivity after periodontal treatment.

Searching
MEDLINE and EMBASE were searched to April 2001; the search strategy was reported. The Journal of Periodontology, Journal of Clinical Periodontology and the Journal of Periodontal Research were manually searched to April 2001 and 'in press' reports were requested from these journals. The reference lists in reviews and relevant texts were checked. Authors of studies with ambiguous data were contacted for further information.

Study selection

Study designs of evaluations included in the review
No randomised or quasi-randomised trials were identified so cross-sectional and prospective clinical trials were eligible for inclusion. Both included studies were before-and-after studies and one was of a split-mouth design.

Specific interventions included in the review
Studies of nonsurgical (with or without adjuvant antibiotics) or surgical periodontal treatment were eligible for inclusion. Studies of antibiotic monotherapy were excluded. In the included studies, periodontal treatment comprised one session of supragingival scaling followed by one session of subgingival scaling one week later, or advice on oral hygiene plus scaling and root planing of one new quadrant of the mouth each week.

Participants included in the review
Studies of systemically healthy patients with periodontitis (including acute, chronic, refractory, early onset or adult) were eligible for inclusion. The studies had to diagnose patients before the treatment started. The patients in the included studies were aged from 28 to 77 years. The included studies were of patients with moderately advanced periodontitis, with variable severity of periodontitis and with any level of bone loss. One study evaluated only first and second incisors.

Outcomes assessed in the review
Studies that reported the intensity of root sensitivity at least 12 months after treatment were eligible for inclusion. However, no studies with follow-up at 12 months were found and this criterion was relaxed. The included studies assessed outcomes at 1, 4 and 8 weeks after treatment. The review assessed the prevalence of root sensitivity, the intensity and changes in root sensitivity, and changes in oral hygiene if this was assessed using an accepted published measure. The included studies assessed root sensitivity to pressure delivered mechanically, by air stimulation, or by a pressure sensitive probe. The patients' responses were evaluated using a questionnaire to assess discomfort during activities of daily life, or using a visual analogue scale (VAS) to assess discomfort. Changes in oral hygiene were assessed using the Plaque Index or the proportion of patients with plaque.

How were decisions on the relevance of primary studies made?
One reviewer screened titles and abstracts. Two reviewers assessed full publications of potentially relevant studies and resolved any disagreements by discussion.

Assessment of study quality
Validity was assessed on the basis of completeness of follow-up: reporting of the number of patients at entry and follow-up, accounting for all recruited patients, and analysis accounting for drop-outs, missing data and excluded patients. A predetermined form was used to assess validity, but the authors did not state who performed the assessment.
Data extraction
Two reviewers extracted the data. The authors of studies with missing data were contacted, where possible, for further information. The number of participants with each outcome event, out of those who completed the study, was extracted.

Methods of synthesis
How were the studies combined?
In general, a narrative synthesis of the studies was undertaken. Percentages were averaged across studies.

How were differences between studies investigated?
Differences between the studies were discussed with respect to the participants, outcome measures and interventions.

Results of the review
Two before-and-after studies (62 patients) were included.

Both studies were of short duration. Both studies reported the number of patients at baseline and follow-up, accounted for all patients who entered the trial, and analysed data taking account of drop-outs.

Prevalence of root sensitivity.

One study (13 patients entered, 11 analysed) found root sensitivity in 9% (1 of 11) of the patients at baseline increased to 55% (6 of 11) one week after treatment and remained at the same level for 8 weeks. One study (49 patients, 35 analysed) found root sensitivity in 23% (8 of 35) of the patients at baseline increased to 54% (19 of 35) one week after treatment.

Changes in root sensitivity.

Root sensitivity increased 1 to 3 weeks after treatment then decreased after this. One study (35 analysed patients) found the mean VAS score was 3.1 at baseline, increasing to 7.2 at one week (P reported as statistically significant). Sensitivity then decreased until it was no longer statistically significantly different from baseline at 4 weeks. One study (11 analysed patients) found that sensitivity peaked one week after treatment. Changes in oral hygiene.

One study that did not include instruction in oral hygiene showed that the Plaque Index generally remained unchanged (level 3) for the 8 weeks. One study that did include instruction in oral hygiene showed that plaque was present on buccal tooth surfaces in 28% at baseline, compared with 10 to 15% after instructions.

Authors' conclusions
There were insufficient randomised controlled trials to answer the question addressed by the review. Limited evidence from two studies showed that about 50% of patients experience root sensitivity after subgingival scaling and root planing, and that the intensity of the sensitivity increases for a few weeks after treatment and then decreases.

CRD commentary
The review question was clear in terms of the intervention, participants and outcomes. The inclusion criteria for study design and minimal duration of follow-up were amended in the light of the studies identified. Several relevant sources were searched and the search terms were stated. Two reviewers independently selected the studies and extracted the data, which reduces the potential for bias and errors. Validity was assessed using defined criteria and some information was presented on the included studies. The authors stated that analyses in individual studies accounted for drop-outs, but gave no information on the reasons for drop-outs. The results reported were based on patients completing the trials (85% and 71% completed) and the influence of missing data on the results was not explored. A narrative review was appropriate given that the review identified only two small before-and- after studies. The evidence from these studies was insufficient to reach definitive conclusions.
Implications of the review for practice and research
Practice: The authors stated that before treatment, patients should be told that root sensitivity may be increased.

Research: The authors stated that randomised controlled clinical trials and prospective studies with short- and long-term follow-up are required to assess the effect of root instrumentation on root sensitivity, and to evaluate the efficacy of preventive and treatment programmes for root sensitivity. They stated that research is required to determine the prevalence and severity of root sensitivity using patient-reported subjective measures, and that protocols should adhere to guidelines advised for dentine sensitivity studies (see Other Publications of Related Interest).

Bibliographic details

PubMedID
12787217

Other publications of related interest

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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.