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The *Australian Dental Journal* publishes selected abstracts in each issue for our readers' interest. A detailed description of the activities of the Cochrane Oral Health Group, written by the Review Group Co-ordinator, Dr Emma Tavender, was published in the June 2004 issue of the Journal (*Aust Dent J* 2004;49:58-59). Also, for explanations of abbreviations and terminology please see Appendix 1 on page 59 of the aforementioned article.

EDITOR

Interventions for replacing missing teeth: treatment of perimplantitis

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Abstract

Background: One of the key factors for the long-term success of oral implants is the maintenance of healthy tissues around them. Bacterial plaque accumulation induces inflammatory changes in the soft tissues surrounding oral implants and it may lead to their progressive destruction (perimplantitis) and ultimately to implant failure. Different treatment strategies for perimplantitis have been suggested, however it is unclear which are the most effective.

Objectives: To identify the most effective interventions for treating perimplantitis around osseointegrated dental implants.

Search strategy: We searched the Cochrane Oral Health Group's Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and EMBASE. Handsearching included several dental journals. We checked the bibliographies of the identified randomized controlled trials (RCTs) and relevant review articles for studies outside the handsearched journals. We wrote to authors of all identified RCTs, to more than 55 oral implant manufacturers and an Internet discussion group to find unpublished or ongoing RCTs. No language restrictions were applied. The last electronic search was conducted on 15 March 2006.

Selection criteria: All RCTs of oral implants comparing agents or interventions for treating perimplantitis around dental implants.

Data collection and analysis: Screening of eligible studies, assessment of the methodological quality of the trials and data extraction were conducted in duplicate and independently by two review authors. We contacted the authors for missing information. Results were expressed as random-effects models using weighted mean differences for continuous outcomes and risk ratios for dichotomous outcomes with 95% confidence intervals (CI). Heterogeneity was to be investigated including both clinical and methodological factors.

Main results: Seven eligible trials were identified, but two were excluded. The following procedures were tested: (1) use of local antibiotics versus ultrasonic debridement; (2) benefits of adjunctive local antibiotics to debridement; (3) different techniques of subgingival debridement; (4) laser versus manual debridement and chlorhexidine irrigation/gel; (5) systemic antibiotics plus resective surgery plus two different local antibiotics with and without implant surface smoothing. Follow up ranged from 3 months to 2 years. No meta-analysis was conducted due to different interventions tested and outcomes used. No side effects occurred in any of the trials. The only significant statistically differences were observed in a 4-month follow-up RCT evaluating the use of adjunctive local antibiotics to manual debridement in patients having lost at least 50% of the supporting bone around the implants. There were improved probing attachment levels (PAL) mean differences of 0.61mm (95% CI 0.40

to 0.82), and reduced probing pockets depths (PPD) mean differences of 0.59mm (95% CI 0.39 to 0.79) in those patients receiving adjunctive local antibiotics. This trial was judged to be at high risk of bias.

Authors' conclusions: There is no reliable evidence suggesting which could be the most effective interventions for treating periimplantitis. This is not to say that currently used interventions are not effective. However, the use of local antibiotics in addition to manual subgingival debridement was associated with a 0.6mm additional improvement for PAL and PPD over a 4-month period in patients associated with severe forms of periimplantitis. In three trials, the control therapy which basically consisted of a simple subgingival mechanical debridement seemed to be sufficient to achieve results similar to the more complex and expensive therapies. Smoothing of rough implant surfaces was not associated with statistically significant improvements of the clinical outcomes. However, sample sizes were small, therefore these conclusions

have to be considered with great caution. More well-designed RCTs are needed.

Plain language summary: As with natural teeth, dental implants can be lost due to gum disease (periimplantitis). This review looked at which are the most effective treatments to arrest periimplantitis

Five studies were included in the review and evaluated five different treatment modalities. In one small study of short duration (4 months) it was shown that the use of locally applied antibiotics in addition to the deep manual cleaning of the diseased implants decreased the depth of the pockets around the implants of an additional 0.6mm in patients affected by severe forms of periimplantitis. In conclusion, at present, there is no reliable evidence to determine which is the most effective way to treat periimplantitis. This is not to say that currently used interventions are not effective. The majority of trials testing more complex and expensive therapies did not show any statistically or clinically significant advantages over the deep mechanical cleaning around the affected implants.

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COMMENTARY

The treatment of peri-implantitis is investigated in this systematic review. The abstract describes a thorough search of the literature up to 15th March 2006, with no language restrictions, to address the focused question of the most effective intervention for management of periimplantitis.

Two independent reviewers included five randomised controlled trials with patient based analyses in this systematic review. Four of the five trials had short term follow-up with one study presenting a 2-years follow-up.

Outcome measures included implant loss, probing depth and attachment level changes. Other outcome measures such as bleeding on probing, suppuration, and marginal bone level changes were inconsistently reported. None of the trials addressed aesthetic or cost issues.

There were no studies comparing the same treatment modalities and therefore no meta-analyses could be performed. Differences in classification of peri-implantitis among the studies meant there was a considerable variation in the severity of the peri-implantitis lesions which would be likely to influence the response to treatment.

The treatment procedures included in the RCTs were largely based on current strategies for treatment of

periodontitis. One trial compared two different surgical techniques incorporating a systemic antibiotic with or without implant smoothing. One trial compared non-surgical debridement with Er:YAG laser therapy. Two trials compared non-surgical treatment modalities with adjunctive locally delivered antimicrobials (metronidazole and doxycycline). While the adjunctive use of doxycycline showed a modest improvement over mechanical debridement alone this local delivery device (Atridox) is no longer available on the market.

While the interventions were generally successful a number of patients were withdrawn from the studies due to persistent peri-implantitis. Furthermore, the sample size of each study was small with a total of 106 patients included in all five studies.

The authors conclude that there is currently insufficient evidence to recommend any one protocol over another for the treatment of periimplantitis. The increasing interest in this clinically relevant topic will likely result in more RCTs focusing on the difficult challenge of periimplantitis treatment. The authors will regularly update their review.

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