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Prevention of alveolar osteitis with chlorhexidine: a meta-analytic review

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Review published: 2005.

CRD summary

This review assessed whether rinsing with chlorhexidine reduced the occurrence of alveolar osteitis (AO) following mandibular third molar removal. The authors concluded that multiple rinsing may reduce the incidence of AO. It was difficult to establish the robustness of the findings due to poor reporting of the review methods and a lack of information on the individual studies.

Authors' objectives

To evaluate the effect of using a chlorhexidine (CHX) rinse, following third molar removal, on the rate of alveolar osteitis (AO).

Searching

MEDLINE was searched without any language restrictions; the search terms were reported, but not the dates searched. Science citations and the bibliographies of identified studies were also searched.

Study selection

Study designs of evaluations included in the review

Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review

Studies of CHX rinses were eligible for inclusion. The included studies used either a single rinse on the day of surgery with different methods of CHX administration, or multiple rinses on the day of surgery and for one week after surgery (as well as pre-surgery rinsing in some studies). Details of the comparators used were not provided.

Participants included in the review

Studies of patients having mandibular third molars extracted were eligible for inclusion.

Outcomes assessed in the review

Studies assessing the incidence of AO were eligible for inclusion. The authors stated that to be eligible for inclusion the included studies had to use similar criteria to diagnose AO, though further details of the criteria required were not provided. The criteria used to diagnose AO in the included studies were not identical: the studies used various combinations of denuded socket, necrotic debris, fetid breath, loss of blood clot, pain not relieved by analgesics, trismus and paper point test for blood.

How were decisions on the relevance of primary studies made?

Three reviewers independently screened studies for relevance.

Assessment of study quality

A subset of studies was assessed based on the following criteria: patient stratification, use of a precise definition of AO, masked taste of placebo and blinded evaluation of the outcome. Two reviewers independently assessed study quality.

Data extraction

The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Relative risks (RRs) and 95% confidence intervals (CIs) were calculated for individual studies.

Methods of synthesis

How were the studies combined?

Studies of single-rinse and multiple-rinse protocols were pooled separately in meta-analyses in which the studies were weighted by sample size. No further details were provided. Publication bias was investigated in the multiple-rinse studies using funnel plots.

How were differences between studies investigated?

In addition to pooling single-rinse and multiple-rinse studies separately, two sensitivity analyses were conducted. One excluded a study using extraction site rather than individual patients for the data analysis, while the other excluded studies that did not meet all quality criteria.

Results of the review

Seven RCTs (824 participants) were included.

Single-rinse studies (2 RCTs, 153 participants).

There was no statistically significant benefit from using a single rinse with CHX following third molar extraction compared with the control (RR 1.36, 95% CI: 0.80, 2.33).

Multiple-rinse studies (5 RCTs, 671 participants).

There was a statistically significant benefit in the incidence of AO from using multiple rinses of CHX following third molar

extraction compared with the control (RR 1.90, 95% CI: 1.46, 2.47). The size of the effect was not altered when only the studies that reported outcome by patient rather than extraction were pooled, or when only studies meeting all quality criteria were pooled.

Authors' conclusions

Rinsing with CHX at least on the day of surgery and for several days following extraction of mandibular third molars was associated with a reduced incidence of AO, although the minimum number of days of rinsing required remained unclear.

CRD commentary

The review used defined inclusion criteria for the intervention, participants and study design, though the inclusion criteria for the outcomes were somewhat unclear. No language restrictions were applied to the searches, but the limited set of sources searched means that relevant studies might have been missed. The review methodology was reasonably well described, although appropriate measures did not seem to have been taken to reduce error and bias during the data extraction process. Only a subset of studies was quality assessed and important aspects of quality, such as method of randomisation and concealment of allocation, were not considered.

A more detailed description of the primary study populations would have been useful and enabled an assessment of the extent of clinical heterogeneity. Statistical heterogeneity was not investigated and details of the statistical pooling were not provided; it was therefore unclear whether the studies were appropriately pooled. Owing to the lack of details on several aspects of the review methodology and on individual studies, it was difficult to establish the robustness of the conclusions. From the data available it was inappropriate to conclude that rinsing at least on the day of surgery and several days after leads to a benefit, given that some of the studies also administered CHX prior to surgery and all these studies were pooled together.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that there is a need for further research to determine the best use for CHX rinses. Future studies need to use a standard definition for AO and stratify patients by factors such as gender, difficulty of extraction and smoking.

Funding

University of Washington Dental Alumni Association.

Bibliographic details

Caso A, Hung L K, Beirne O R. Prevention of alveolar osteitis with chlorhexidine: a meta-analytic review. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontics 2005; 99(2): 155-159. [PubMed: 15660084]

Indexing Status

Subject indexing assigned by NLM

MeSH

Anti-Infective Agents, Local /administration & dosage /therapeutic use; Chlorhexidine /administration & dosage /therapeutic use; Confidence Intervals; Dry Socket /prevention & control; Humans; Mandible /surgery; Molar, Third /surgery; Mouthwashes /administration & dosage /therapeutic use; Prospective Studies; Randomized Controlled Trials as Topic; Tooth Extraction

AccessionNumber

12005003171

Database entry date

28/02/2006

Record Status

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CRD has determined that this article meets the DARE scientific quality criteria for a systematic review.

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PMID: 15660084

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