Authors' objectives
To evaluate treatments with respect to the recurrence of the odontogenic keratocyst (OKC).

Searching
Index Medicus citations were searched from 1956 to 1966 for English language publications. MEDLINE was then searched from 1966 to the present using the subject heading 'odontogenic cyst', with the textwords 'keratocyst' and 'basal cell naevus syndrome'. A final search of MEDLINE used a combination of the textwords 'keratin' and 'cyst'. All citations in the retrieved articles were reviewed.

Study selection
Study designs of evaluations included in the review
Studies where the participants were consecutive patients and the follow-up was adequately described, were considered. The included studies were retrospective, consecutive case series.

Specific interventions included in the review
The following interventions were included: resection; curettage; enucleation alone; enucleation combined with adjunctive therapy, such as the application of Carnoy's solution, decompression before enucleation, or cryotherapy; radial enucleation; and marsupialisation.

Participants included in the review
Patients undergoing treatment for OKC, as diagnosed by histopathologic evaluation, were included.

Outcomes assessed in the review
The recurrence rate was assessed.

How were decisions on the relevance of primary studies made?
Four judges, blinded to the decisions of the other judges, independently reviewed the articles for inclusion. If there was unanimous agreement among the four judges, the articles was either accepted or rejected. If a split decision was reached, a second round of review was instigated involving an open discussion by all four judges. If, after the second round, a majority decision could not be reached, a fifth judge reviewed the article and cast the deciding vote.

Assessment of study quality
The authors used eight criteria to assess the articles: adequate diagnostic evaluation; adequate description of the patient selection process; adequate description of the follow-up period; adequate description of the treatment; assembly of an inception cohort; documentation of adverse outcomes; adequate clinical and demographic information; and unbiased surveillance of the patients. The authors do not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction. Data were extracted for the following categories: study identification, treatment, the number of cysts, the number of recurrent cysts, recurrence rate (%), the length of follow-up, and the management of nevoid basal cell carcinoma patients.

Methods of synthesis
How were the studies combined?
The results were discussed in the narrative, whilst summaries of recurrence rates and treatments were presented in tables.

How were differences between studies investigated?
The authors do not report a formal method for assessing heterogeneity. The authors did, however, discuss the possible sources of heterogeneity in the studies; these included subtle variations in treatments, differences in the locations of cysts, the presence or absence of infection, associated teeth, involvement of mucosa, size of the lesion, and association with nevoid basal cell carcinoma syndrome.

Results of the review
Fourteen consecutive case series studies met the inclusion criteria; the number of participants was not stated.

Resection was found to have the lowest recurrence rate (0%). One study found that some patients undergoing this intervention had a transient, mild inferior alveolar nerve paresthesia but no other complications.

Curettage had a recurrence rate of 19.2%.

Enucleation alone had a recurrence rate of 28.7%.

Enucleation combined with Carnoy's solution had a recurrence rate of 1.6%.

Radical enucleation had a recurrence rate of 16.7%.

Enucleation with cryotherapy had a recurrence rate of 31.3%.

Marsupialisation had a recurrence rate of 24.4%.

Authors' conclusions
The authors state that the existing literature is difficult to interpret because of the retrospective nature of the study designs (consecutive case series). It appears that resection or enucleation with adjunctive therapy is associated with recurrence rates that are lower than those associated with enucleation alone.

CRD commentary
The authors stated their research question, and the inclusion and exclusion criteria were fairly detailed. The literature search was limited by only searching one database and being restricted to English language publications. It is possible that additional studies may have been missed. The authors reported who, and how many of the authors, performed the selection of studies and there was an extensive description of the selection process. The authors did not report who performed the data extraction or the validity assessment. Although there was not a formal test for validity, the assessment of the included studies was also extensive and well-reported in the discussion.

The review was a narrative discussion with no statistical pooling. Recurrence rates were summarised in tables and discussed in the text. Treatment options based on these rates were also debated in the text of the review, although very little patient data were included.

The authors' conclusions appeared to follow from the results but should be viewed with caution because of the poor quality of the study designs included, limited participant characteristics, and methodological limitations in the review process.

Implications of the review for practice and research
Practice: The authors state that ideally a biopsy specimen of all cysts should be examined to confirm the presence or absence of an OKC before definitive treatment. If the clinician elects not to complete a biopsy, then adjunctive therapy
should be used when enucleating routine odontogenic cysts in the event they are OKCs. Adding Carnoy's solution to the
cyst cavity for three minutes after enucleation results in a recurrence rate comparable to that of resection without
unnecessarily aggressive surgery. When the presence of an OKC has been confirmed by examination of a biopsy
specimen, three choices appear to have equal efficacy. For a routine OKC in a person who is likely to return for follow-
up treatment, Carnoy's solution appears to be the least invasive procedure with the lowest recurrence rate. If the cyst is
very large, decompression of the cyst followed by enucleation will also have a low recurrence rate. One could also
consider the use of Carnoy's solution at the enucleation stage. If a patient is unlikely to return for follow-up, the lesion
should be resected.

Research: The authors state that prospective studies need to be initiated.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract
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