Healing of oral lichenoid lesions after replacing amalgam restorations: a systematic review

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CRD summary
This well-conducted review assessed the replacement of amalgam restorations for the healing of oral lichenoid lesions (OLLs). The authors concluded that such replacement could result in improved or healed OLLs, and that the topographic relationship between OLL and amalgam restoration is a useful prognostic marker. These conclusions were based on observational evidence but are likely to be reliable.

Authors’ objectives
To assess the effectiveness of replacing amalgam restorations for the healing of oral lichenoid lesions (OLLs).

Searching
MEDLINE, EMBASE and the Cochrane Library (Issue 2, 2000) were searched from inception to 2000; the search terms were given. In addition, the reference lists of reviews were screened and experts were contacted. Only studies reported in the English language were included in the review.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) and controlled clinical trials (CCTs) were eligible for inclusion. In the absence of any RCTs or CCTs, cohort studies and case-control studies were included in the review. The duration of follow-up in the included studies ranged from 2 months to over 9 years.

Specific interventions included in the review
Studies of total or partial amalgam restorations were eligible for inclusion. Restorations had to be conducted using the following dental materials: ceramic, metal ceramic, gold, composite, glass ionomer or resin-modified glass ionomer. The included studies used mainly gold, composite or porcelain materials for replacing amalgam restorations.

Participants included in the review
Studies of patients with oral lichenoid reactions of any clinical form (reticular, striated, atrophic, erosive or ulcerated), diagnosed clinically with or without histopathological confirmation or patch testing, and in whom amalgam restorations were suspected as a causal factor were eligible for inclusion. The mean age of patients in the included studies ranged from 40 to 58 years, and 75% of the patients included in the review were female.

Outcomes assessed in the review
Studies reporting clinical results were included in the review. The outcomes were graded as complete healing (complete absence of all clinical signs and symptoms) or marked healing (reduction in the size and/or severity of the lesion). Follow-up assessments at 3, 6 and 12 months were included. A secondary outcome was patient satisfaction. The results of patch testing were also included in the review.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed studies for relevance.

Assessment of study quality
Cohort studies were assessed on the basis of whether the patient population was representative (particularly with respect to the clarity of the inclusion criteria and the level of disease progression), the length of follow-up, and the assessment of outcomes using objective criteria. Case-control studies were assessed for the reliability of the case assessment, comparability of the control group (including the potential for overmatching), and the comparability of the assessment of the intervention and control groups.
Two reviewers independently assessed the studies for validity. Any disagreements were resolved by discussion, with referral to a third reviewer where necessary.

**Data extraction**
The authors stated that data from some studies were independently extracted by two reviewers and any discrepancies resolved by a third, but it was not clear what procedure was adopted for the remainder of the studies. Data were extracted on study design, patient characteristics, OLL characteristics, histological confirmation, patch test results, follow-up and healing outcomes.

**Methods of synthesis**

How were the studies combined?
The studies were combined in a narrative, accompanied by detailed tables.

How were differences between studies investigated?
Differences between the studies were discussed in terms of the study design, the type of OLL, the treatment criteria employed, and the outcomes reported.

**Results of the review**
Nineteen studies with a total of 1,158 patients were included in the review: 14 cohort studies (n=832) and 5 case-control studies (n=326).

The quality of the included studies was considered to be generally good.

The proportion of patients achieving complete healing ranged from 37.5 to 100%. In total, 518 (85%) of 612 patients showed healed or improved lesions following the replacement of amalgam restorations.

The results of patch testing varied between the studies. Overall, 214 (90%) of 239 patients with positive patch results and 74 (68%) of 109 patients with negative patch results had complete or marked OLL healing.

Five studies reported results relative to the topographic relationship between OLL and amalgam restoration. There was complete healing of lesions in close contact with amalgam in between 45% and 77% of patients. Overall, 246 (93%) out of 266 of such lesions healed or improved following amalgam replacement. Where lesions were greater than the area of amalgam contact, 42 out of 60 patients (i.e. 70%) showed improvement; where there was no contact between the OLL and the amalgam, 11 out of 24 patients (i.e. 46%) showed improvement.

**Authors’ conclusions**
OLLs might be caused by amalgam restoration; a mercury compound is potentially a major aetiological factor. The replacement of amalgam restorations could result in the resolution or improvement of an OLL in most instances. The topographic relationship between OLL and amalgam restoration is a useful prognostic marker, but not a conclusive indicator of the outcome of replacement. Patch testing appears to be of limited value.

**CRD commentary**
The review question and the inclusion criteria were clear. The search was adequate and attempts were made to include unpublished studies. However, as the search was restricted to studies reported in English, it is possible that some relevant studies were excluded from the review. The authors used appropriate measures to minimise bias and error in the selection of studies for the review and validity assessment, although it was not clear that this was the case for the whole of the data extraction process. Appropriate criteria were used to assess the validity of the observational studies included in the review. The decision to adopt a narrative synthesis was appropriate. The observational nature of the data was reflected in the conclusions of the review, which are likely to be reliable.
Implications of the review for practice and research

Practice: The authors stated that protocols for the assessment of adverse reactions to dental amalgam require standardisation, and that amalgam components other than mercury, as well as frictional elements, should be considered in the aetiology of OLLs.

Research: The authors noted the lack of RCTs and CCTs.

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