Meta-analysis of anterior veneer restorations in clinical studies
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Authors' objectives
To aggregate an overall survival rate for four types of veneer restorations (VRs).

Searching
MEDLINE was searched from 1983 to November 1996 using the keywords 'dental in SB' and 'veneer*'.

Study selection
Study designs of evaluations included in the review
The studies were either clinical follow-up studies, or reviews in English with a follow-up of at least 2 years.

Specific interventions included in the review
The four types of anterior VRs were porcelain, preformed acrylic, direct resin composites, and indirect resin composites.

Participants included in the review
The participants were dental patients undergoing VR.

Outcomes assessed in the review
Failure of the VR, defined as debonding, chipping or fracture of the VR, or failure due to poor aesthetics (including repairs).

How were decisions on the relevance of primary studies made?
The primary and secondary selection process was carried out independently by three students. Cohen's kappa coefficient was used to measure agreement between the three observers (reported as a percentage from a scale of 0 to 1). Consensus was reached in cases of disagreement.

Assessment of study quality
The observers used a modification of the quality scoring system of Antczak et al. (see Other Publications of Related Interest no.1) with a maximum possible score of 80 points. Items were classified according to four main fields: study methodology, dental methodology, evaluation methodology, and statistical methodology. The total score of a study was adjusted to a scale of 0 to 1 scale by the factor 0.0125, and the resulting value was called the Good Scientific Practice score ('GSP score'). The criteria formulation and calibration sessions were conducted prior to the quality assessment. The studies were assessed by two observers in a blinded formal procedure, using only the 'Materials and Methods' and 'Results' sections.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
The overall cumulative life-table survival curve was constructed by pooling the data from the studies included into a new data set. The studies were grouped according to the type of VR.

How were differences between studies investigated?
To test for homogeneity of the data, the proportion (and confidence interval) of patients surviving 2 years in each study was plotted against the overall survival at the 2-year follow-up.

Results of the review
Twenty-five clinical follow-up studies were identified in the primary selection process. Of these, 14 studies met the criteria of the secondary selection process. There were 1,671 patients in the porcelain VR group, 323 in the preformed acrylic VR group, 361 in the indirect composite group, and 289 in the direct composite group.

The kappa-score for agreement between the three students in the secondary selection process ranged from 0.49 to full agreement (scale 0 to 1.0).

The weighted overall mean quality score of the studies was 0.57 (standard error 0.09). There was adequate agreement (kappa score 64%) between the independent assessors.

From the 9 studies on porcelain VRs, the pooled cumulative proportion of survival after 3 years was 0.92 (standard error 0.01), and from the 3 studies on preformed acrylic VRs this figure was 0.74 (standard error 0.03).

After 10 years, the proportion surviving was 0.28 (standard error 0.06) for preformed acrylic VRs, based on the data from 1 study.

One study on direct composite VRs gave a survival estimate of 0.80 (standard error 0.03) after 2.5 years, whilst another on indirect resin composite VRs gave a survival estimate of 0.80 (standard error 0.7) after 2 years.

Authors’ conclusions
The evaluative and statistical basis of clinical VR studies may be improved to obtain an effective inference of the results. The porcelain VRs showed acceptable longevity after 3 years, which appeared to be better than that of preformed acrylic VRs. The overall result of this meta-analysis suggests that more than 90% of porcelain VRs survive at least 3 years.

CRD commentary
On the whole, the authors conducted a good systematic review. The research question was well stated and the inclusion, selection and quality scoring processes were very thorough and clearly reported. The authors searched only one database and excluded abstracts, non-English language papers, and unpublished data from the review. Thus, it is unclear whether additional studies may have been missed.

Although quality scores were not used to weight the studies when pooling, the authors gave intelligent reasons for this in their discussion.

The details of the individual studies were not reported in depth, and the statistics used to pool the data were not shown. The authors tested for (and found) heterogeneity between the studies and state that this may have affected the results of the review. The confidence intervals were not reported although the authors mention that they were calculated. The standard error was reported for each of the results.

The conclusions of the review should be viewed with care given the possibility that there were missing data, and details were missing on the statistical analysis of the pooled data.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors state that a cost-effectiveness analysis is needed to consider all the factors that are involved in the costs of treatment and life-cycle costs.
Bibliographic details

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9611940

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Acrylic Resins; Clinical Trials as Topic; Composite Resins; Cuspid; Dental Porcelain; Dental Restoration Failure; Dental Veneers; Follow-Up Studies; Humans; Incisor; Quality Assurance, Health Care; Survival Analysis; Treatment Outcome

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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.