How long do fibre-reinforced resin-bonded fixed partial dentures last?

Abstracted from

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Clinical studies of fiber-reinforced resin-bonded fixed partial dentures: a systematic review.

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Question: What are the survival rates of fibre-reinforced resin-bonded fixed partial dentures?

Data Sources Searches were made for data using Medline and the reference lists of identified papers by two independent readers. Only papers published in English were considered and reviews, case reports, descriptive reports and in-vitro studies were excluded.

Study selection Prospective or retrospective cohort studies were selected.

Data extraction and synthesis Information on the design, location and the choice of material was extracted. Retainer type (inlay, surface, crown retainer), number of abutment teeth, and different span distances were recorded and, as far as possible, the survival period for each fixed partial denture (FPD) was extracted on an individual basis. Technical complications and number of failures were extracted, if reported. FPD survival was defined as the FPD remaining in situ, with or without modification, during the observation period. An overall survival curve was constructed using the Kaplan–Meier method and the possibility of performing a regression analysis on different types and locations of FPD was investigated.

Results In all, 15 articles dealing with 13 sets of patients and 435 FPD were included, with observation periods that varied between 10 months and 5.7 years. Of 435 FPD, 88 failed within 5 years, with a calculated survival rate of 4.5 per year (73.4%; 95% confidence interval, 69.4–77.4%). Converted survival rates at 2 years' follow up showed substantial heterogeneity between studies. It was not possible to build a reliable regression model that indicated risk factors. The technical problems most commonly described were fracture of the FPD and delamination of the veneering composite.

Conclusions The majority of the studies showed a survival rate of approx. 72% after 2–5 years. This study highlights the need for good-quality randomised clinical trials (RCT).

Commentary

Fibre-reinforced resin-bonded FPD have some perceived advantages in terms of aesthetics (because they avoid the use of metal) and can be more conservative to tooth tissue. This systematic review attempts to obtain survival rates of fibre-reinforced resin-bonded FPD and to explore relationships between reported survival rates and risk factors.

The data here were obtained following a Medline search and a search made by hand of reference lists of the selected papers. The number of studies identified was perhaps limited by not using other search engines, by only including papers published in English, and not contacting experts. Fifteen studies were identified and all but one were observational studies (the majority of which were prospective studies).

The remaining study was a RCT that compared full ceramic FPD with fibre-reinforced resin-bonded FPD. Including these types of study is reasonable when attempting to ascertain survival rates, but is clearly of limited use when comparing results with other types of bridge.

Little was written about the assessment of the quality of the included studies. Although two independent readers selected the papers, there does not appear to have been an attempt to score or assess the quality of the studies. This may reflect the limited number of studies and sample size. The authors do acknowledge that the limited descriptions of sample and study characteristics restrict the level of evidence.

The missing study details also restrict the conclusions we can draw from the paper. As the authors point out, many of the studies do not describe the patient selection criteria or the failures in relation to basic factors such as retention type or location. Without these details, we are prevented from gaining information that could influence our clinical practice, such as whether anterior or posterior fibre-reinforced resin-bonded FPD perform better. Although it does appear to be the opinion of several of the authors that a posterior location or long span are risk factors (and this may be reasonable), the evidence is not available from this review to support this.

By grouping different types of retainer (inlay, surface and crown), again, it is difficult to draw conclusions from the survival data. If we assume that a full-coverage crown retainer performs differently from a surface retainer, the final survival rate may have little relation to clinical practice. Other factors such as variations in patient selection, choice of materials, luting cements and operator's experience may have a similar effect.

Some of the studies have different criteria for failure, also limiting the validity of the survival data. With some studies not regarding certain technical problems as failures, the survival data may be an overestimate. Few data seem to be available on potential advantages of fibre-reinforced resin-bonded FPD, such as conservative tooth preparation and patient satisfaction. Again, without this information it is difficult to apply the findings of the review to clinical practice.

Many of these problems are identified by the authors. The conclusions and methods here are reasonable when considering the limited number of studies and the information available from the studies that have been done in this area. Clearly, further high quality and well designed trials are required before we have sufficient evidence to warrant changing clinical practice.

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