

# Summary of: The survival of Class V restorations in general dental practice. Part 2, early failure

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## VERIFIABLE CPD PAPER

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**Objective** To evaluate Class V restorations placed by UK general practitioners comparing those failing or surviving after two years, and to identify factors associated with early failure. **Design** Prospective longitudinal cohort multi-centre study. **Setting** UK general dental practices. **Materials & methods** Ten dentists each placed 100 Class V restorations and recorded selected clinical information at placement and recall visits. Univariate associations were assessed between recorded clinical factors and whether restorations had failed or not at two years. Multi-variable binary logistic regression was also undertaken to identify which combination of factors had a significant effect on the probability of early failure. **Results** At two years, 156 of 989 restorations had failed (15.8%), with 40 (4%) lost to follow-up. Univariate analysis showed a significant association between restoration failure and increasing patient age, payment method, the treating practitioner, non-carious cavities, cavities involving enamel and dentine, cavity preparation and restoration material. Multi-variable analysis indicated a higher probability of early failure associated with the practitioner, older patients, glass ionomer and flowable composite, bur-preparation and moisture contamination. **Conclusions** Among these practitioners, both analytic methods identified significant associations between early failure of Class V restorations and the practitioner, cavity preparation method, restoration material and patient's age.

### EDITOR'S SUMMARY

The baseline data from this long-term practice-based study were reported previously in the *British Dental Journal*<sup>1</sup> and this second article now begins the process of reporting survival data, detailing the results of a comparison of those restorations which had failed after two years with those which had survived.

The findings provide interesting information about factors that may be associated with early failure of Class V restorations, including lack of tooth

preparation and increasing age of the patient. This type of information is of direct use to practising dentists, a fact that highlights once again the importance of practice-based research studies.

This importance is further underlined in the authors' responses to our questions (right), where they state that not only will they shortly report on five year survival data, but also that the results of this project have raised further questions that warrant investigation. This ongoing work should provide a more complete picture of

the factors influencing survival of Class V restorations in primary dental care, with corresponding benefits for patients.

The full paper can be accessed from the *BDJ* website ([www.bdj.co.uk](http://www.bdj.co.uk)), under 'Research' in the table of contents for Volume 210 issue 11.

Rowena Milan  
Managing Editor

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1. Stewardson D, Thornley P, Bigg T *et al.* The survival of Class V restorations in general dental practice. Part 1, baseline data. *Br Dent J* 2010; **208**: E17.

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**IN BRIEF**

- Demonstrates the value of practice-based research to provide evidence from the 'real-life' clinical environment.
- The biggest influence on early failure of Class V restorations was the clinician who placed the restoration.
- The results suggest that good handling of restorative materials is more important than the type of material chosen.
- Some materials are less user-friendly than has been suggested.

**COMMENTARY**

Logic dictates that the most appropriate research to predict the success of restorations in general dental practice should be undertaken within that setting. Of course, at that point, a number of complications arise. Using only one practitioner reflects solely on the skills of that operator. 'It works in my hands' applies only to the individual who makes that statement. However, recruiting a number of practitioners increases the number of variables involved and the ability to make clear judgements becomes increasingly complex, although more applicable to the profession in general.

This excellent paper uses very sophisticated statistical techniques to try to identify factors affecting the early failure, over a two year period, of nearly 1,000 Class V restorations placed by 10 dentists. Many factors were analysed to determine where significant associations fell.

It will be no surprise that the operator was an important factor, as we all work slightly differently. Increasing failure (of many things) with increasing age may also be a fact of life, but it's surprising to note that this even extends to Class V composite early failures rates, probably as a result of having to bond to increasingly sclerotic dentine.

The positive effect of (even minor) tooth preparation with a bur flies in the face of many who have stated that adhesive techniques reliably replace the need for mechanical preparation. The incontrovertible evidence here is that even a small amount of preparation with a bur increases the durability of most cervical restorations significantly.

Over the years many institutions have taught that glass ionomer cements (GICs) are ideal for non-carious cervical notch cavities due to their inherent chemical adhesion and fluoride release. Although adhesion may well occur, conventional GICs appear to have inadequate physical properties to be used predictably in this situation – although the use of resin modified glass ionomer is a better option. Flowable composite, however, appears to be a particularly risky choice.

Another possible surprise for readers who have qualified in the composite era is that Class V amalgams appear to perform remarkably well (or that any dentists still do these at all). Apart from aesthetic restrictions, these restorations (obviously employing tooth preparation) do not exhibit major early failure rates and so could be considered to be the 'best' material to use in these situations. However, this study only examines the early failure of these restorations and would need to be extended over time to see if these results hold true for longer periods.

More than most papers, this article could change clinical practise. At the very least, we have robust information regarding the performance of a range of restorative materials in the 'real world'. We can also consider a certain cost/benefit – the cost of slight tooth preparation *versus* the benefit of a decreased early failure rate. One factor that is difficult to compensate for is the operator – that's for each of us to address.

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**AUTHOR QUESTIONS AND ANSWERS****1. Why did you undertake this research?**

There is a pressing need for studies which look at how restorations perform when placed by busy dentists in their everyday practice rather than by a small number of experienced operators in closely controlled environments. The results of such studies should extrapolate more reliably to the wider arena of general practice where most dentistry is provided, and increase our understanding of the factors which influence failure. Many other studies are of small or moderate size which reduces the power of the statistical tests used to analyse the collected data. Our goal was to address some of the shortcomings of other studies and also to involve practitioners in the process of research.

**2. What would you like to do next in this area to follow on from this work?**

This study is ongoing, and we will shortly produce a report on the survival of these restorations at five years. The results from this investigation have already raised additional questions concerning how practitioners manage Class V restorations, which will require us to gather more detailed information on cavity preparation methods, bonding techniques and placement methods. We intend to carry out further studies focusing on these more specific issues. The successful involvement of dental practitioners at all stages of this project has encouraged us to undertake several other studies within general practices on the effectiveness of aspects of dental treatment which should be of importance and relevance to practising dentists.