

Int Poster J Dent Oral Med 2000, Vol 2 No 3, Poster 46

12-year follow-up study of silicoated resin-bonded fixed partial dentures

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Language: English

Authors: Ali-Reza Ketabi, Thomas Kaus, Claudia Bergbreiter, Lothar Pröbster Dept. of Prosthodontics, University of Tuebingen, Germany

International Poster Journal

Date/Event/Venue:

10.03.99-13.03.99 General Session of the IADR Vancouver, Canada

Introduction

Resin-bonded fixed partial dentures (RBFPD) are a conservative approach for the replacement of missing teeth. Aim of the present study was to evaluate the clinical performance of silicoated RBFPD's, whose metal retainer surfaces were silicoated with the Silicoater (Kulzer Co ®., FRG) procedure.

Material and Methods

Patients and restorations:

Beginning 1986, 74 RBFPD's (64 anterior and 10 posterior) were delivered to 61 patients (Tab. 1). The clinical procedures were performed by one of the authors (L.P.). Tooth preparation consisted of occlusal rest seats, horizontal ledges, and vertical grooves (Fig. 1). All restorations were cast in non-precious alloys, 60 in a NiCr-alloy (Wiron88®, BEGO Co.) and 14 in a CoCr-alloy (Remanium CD®, Dentaurum Co.). All were veneered with ceramics (Vita VMK 68®, Vita Co.). The retainer surfaces were treated according to the manufacturer with the Silicoater procedure (sandblasting, silicoating, and silanizing).

After enamel etching with phosphoric acid gel the FPD's were seated with Microfill pontic (Kulzer company®), a bis-GMA light- and autocuring composite resin cement.

Patients were followed up at least once a year. RBFPD's loss or retainer loosening were considered as failure, and the survival rates calculated with the Kaplan-Meier method.

Count	Anterior	Posterior	
Maxillary	48	8	56
Mandibular	16	2	18
	64	10	74

Tab. 1



Fig. 1: Tooth preparation

Results

Drop-outs:

One patient could not be followed up at all. 29 (47.3 %) patients were rated as drop out, as they did not appear for recall for more than one year within the 12 year observation period.

Survival rate:

The maximum observation time of all restorations was 11 ½ years. Figure 2 shows the survival curve (Kaplan-Meier), which was calculable for 11 ½ years. The survival rate after 10 years was 76.4 $\% \pm 12$ % (95 % confidence interval). For the anterior bridges alone the calculated survival rate was 78 $\% \pm 13$ % after 10 years. 14 primary failures (18.9 % of all restorations), i.e. retention loss of one or more retainers, were observed after a mean function time of 4.1 years. 4 of the 14 RBFPD's were rebonded, thus a survival rate of 84.2 $\% \pm 9$ % (87.3 $\% \pm 8.8$ % for anterior bridges alone) of functioning restorations was calculated after 10 years (Fig. 3). One of the bridges failed after 30 months, was replaced with another, which again failed after 31 months. The 9 other failures were treated with conventional FPD's.

Clinical findings:

3 failures were associated with carious lesions of the abutment teeth. 3 veneer fractures occurred, however, the bonding of the RBFPD's was not affected.





Fig. 2: Kaplan-Meier curve of primary failures Fig. 3: Kaplan-Meier curve of functional survival

Discussion and Conclusions

Only few longitudinal clinical studies with an observation period of more than 10 years have been published. As in our study a major difficulty is the loss to follow-up during the final years, which is mainly due to the inability to contact patients. Creugers et al. found a significant difference between perforated anterior bridges with a survival rate of 49 % \pm 7 % and etched anterior bridges with a survival rate of 57 % \pm 7 % after 10.5 years (Creugers, N. H. et al. 1997). Williams et el. Reported of a 64 % survival rate after 10 years (Williams, V. D. et al. 1989). A calculated survival rate of 60 % after 10 years was published by Pröbster and Henrich (Pröbster, B. and Henrich, G. M. 1997). Our study showed an overall survival rate of 76.4 % \pm 12 % after 10 years. Considering the 95%-confidence interval, our results are comparable to the previously reported results of Creugers, Williams and Pröbster.

It is concluded, that silicoated resin-bonded fixed partial dentures are a viable treatment means with an acceptable success expectancy.

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This Poster was submitted on 24.07.00 by Dr. Ali-Reza Ketabi.

Correspondence address:

Dr. Ali-Reza Ketabi Zentrum ZMK, Poliklinik für Prothetik Univ-Klinik Tübingen Calwerstr. 7/7 D - 72076 Tübingen

Poster Faksimile:

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