

Comparison of failure rates of adhesive-fixed partial dentures for in vivo and in vitro studies.

[Behr M](#), [Hindelang U](#), [Rosentritt M](#), [Lang R](#), [Handel G](#).

Department of Prosthodontics, University of Regensburg, 93042 Regensburg, Germany.
Michael.Behr@klinik.uni-regensburg.de

The objective was to investigate associations between the results of an in vitro and an in vivo study using an artificial mouth and a study of adhesive fixed partial dentures (AFPD) begun in 1985 [1]. Twenty extracted human molars and 20 human upper incisors were inserted into PMMA resin, 6 mm apart to represent a gap. Two preparation methods (identical to those in in vivo conditions) were used: a retentive preparation technique (posterior) and a non-retentive preparation technique (anterior). The frameworks of the bridges consisted of CoCr-alloy with a ceramic veneered pontic to replace the missing tooth. The bonding surfaces of the posterior AFPDs were conditioned with a tribochemical system, while the anterior AFPDs were sandblasted. All AFPDs were inserted using a dual curing composite cement. During thermal-cycling and mechanical loading (TCML: 6000 x 5 degrees C, 1.2 x 10⁶ x 50 N, 1.66 Hz) in an artificial environment, the frequency and type of failures were observed. The above mentioned loading parameters were hypothesized to represent a period of 5 years under oral conditions. The results were compared to those of similar bridge-types in the in vivo study. The Kaplan-Meier estimations showed similar graphs for in vivo and in vitro with both types of AFPDs. In vivo and in vitro, the retentively prepared AFPDs were markedly more successful. With regard to the failure types, the simulation-parameters seemed to represent a loading stress that was comparable to in vivo conditions.

PMID: 11218512 [PubMed - indexed for MEDLINE]