Dental Materials

Volume 24, Issue 4, April 2008, Pages 508–513

Influence of saliva contamination on zirconia ceramic bonding

B. Yang[a], H.C. Lange-Jansen[b], M. Scharnberg[b], S. Wolfart[a], K. Ludwig[a], R. Adelung[b], M. Kern[a,]

http://dx.doi.org/10.1016/j.dental.2007.04.013

Abstract

Objectives

The purpose of this study was to investigate the influence of saliva contamination and cleaning methods on adhesive bonding to dental zirconia ceramic with a phosphate-monomer-containing luting resin.

Methods

After saliva immersion, airborne-particle abraded ceramic specimens were cleaned with water rinsing, with isopropanol, with phosphoric acid gel, or with additional airborne-particle abrasion. Airborne-particle abraded specimens without contamination were used as the control group. Chemical analysis of the ceramic surfaces of all groups was done using X-ray photoelectron spectroscopy (XPS). The influence of contamination and cleaning methods on ceramic bond durability was examined by tensile bond strength (TBS) testing after 3 days or 150 days water storage with 37,500 thermal cycles.

Results

After saliva contamination XPS revealed an organic coating which was not removed completely with water rinsing, with isopropanol, or with phosphoric acid. Using TBS testing a strong influence of contamination and cleaning methods on resin bond strength and its durability was found.

Significance

Saliva contamination significantly affected resin bonds to zirconia ceramic and its durability. Airborne-particle abrasion was the most effective cleaning method.

Keywords

Zirconia ceramic bonding; Saliva contamination; Cleaning

Corresponding author. Tel.: +49 431 5972874; fax: +49 431 5972860.