







Research Article

The Influence of Different Surface Cleansing Agents on Shear Bond Strength of Contaminated Lithium Disilicate Ceramic: An In Vitro Study

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Background and Purpose. Contamination of the lithium disilicate (LDS) during the try-in procedure is unavoidable and may weaken the bond strength of restoration. The purpose of this study was to investigate the efficacy of different surface cleansing agents on the shear bond strength (SBS) of contaminated LDS. **Materials and Methods.** Seventy LDS specimens were randomly divided into seven groups. The first group was noncontaminated surface (PC). The six other groups were contaminated with the saliva and silicone disclosing medium and treated with no surface cleansing agent (NC); phosphoric acid (PO); Ivoclean (IV); sodium hydroxide solution (NA); Restorative Cleansing Agent (RC); and hydrofluoric acid (HF). Then, LDS specimens were cementated with Panavia V5 to resin composite rod. Each specimen was subjected to an SBS test. The modes of failure was inspected under light microscope. The surface element of each group was examined by SEM-EDS. **Results.** The results were analyzed with one-way ANOVA and Tamhane's T2. The mean SBS value of NC was significantly lower than others ($p < 0.05$), and HF was significantly higher than others ($p < 0.05$). However, PC, PO, IV, NA, and RC were not significantly different from each other ($p > 0.05$). The mode of failure was mostly adhesive failure in every group. The surface showed similar amount of elements in every group. **Conclusions.** The SBS of LDS was reduced by saliva and silicone disclosing medium contamination which can be restored using acid- and alkaline-based surface cleansing agents before the cementation procedure.

1. Introduction

Nowadays, esthetics is one of the factors in material selection for dental restorations. Recently, there has been a significant growth in using lithium disilicate (LDS) in dental practices. LDS is well known for its mechanical properties and its versatility in dental uses. It can be used to fabricate various types of fixed restorations, including single crowns and multiple-unit bridges [1]. Furthermore, the advantage of LDS over other materials is that it has extremely low fracture rates. It can withstand a ration fatigue of 1 million cycles at loads of 1,000 N [2]. The study showed that LDS Press had higher fatigue failure load and number of cycles for failure than LDS-CAD when the Monobond Etch and Prime system

was used. However, when conditioned with hydrofluoric acid and silane, the difference in failure is not significant [3].

In common dental practices, fixed restorations are clinically tried in the patient's mouth prior to cementation. In this step, the restoration is inevitably contaminated with both the saliva and silicone disclosing medium. Saliva is a slightly acidic mucoserous exocrine secretion in the oral cavity. It is composed of various electrolytes, for example, sodium, potassium, calcium, magnesium, bicarbonate, and phosphates. Saliva also consists of mucins, nitrogenous products, and macromolecule proteins such as immunoglobulins, proteins, and enzymes [4]. The silicone disclosing medium, also known as silicone fit indicator, is a material used to detect the interference on the intaglio of a crown. This helps increase the fit of the crown to