

Review

Dental Surface Conditioning Techniques to Increase the Micromechanical Retention to Fiberglass Posts: A Literature Review

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Abstract: Glass fiber posts (GFP) have an elastic modulus that shares structural characteristics with dentin. Ineffective removal of the smear layer (SL) in the root canal after post space preparation reduces resin tag formation, compromising an efficient hybrid layer formation leading to a subsequent debonding. In this sense, this review article focuses on the published literature related to dentin conditioning for GFP placement with the use of acidic solutions such as EDTA, citric and maleic acid or prefabricated conditioning solutions such as MTAD and QMix, both with/without activation by sonic or laser devices, analyzed by scanning electron microscopy (SEM) and/or push-out bond strength (POBS) test. The collected information suggested that the conditioning agent that showed better results for dentin conditioning increasing the bond strength of the GFP to the root canal is 17% EDTA without activation.

Keywords: dentistry; dental materials; glass fiber post; irrigant; smear layer; dentin conditioning; push-out bond strength

1. Introduction

Post and crown are dental rehabilitation options for dental organs extensively damaged [1]. Posts could be metallic [2], ceramic [3] or fiber reinforced composite [4]. The glass fiber posts (GFPs) are the most frequently used posts nowadays as they have elastic moduli that share similar to dentin [5,6]. In the clinic, the overall survival rate of the GFPs is 92.8% [7]. Nonetheless, GFPs present an annual failure rate after 5 years of 1.7%, mainly in consequences of root fractures and post-debonding [8]. Post-debonding occurs typically by adhesive failure between dentin-cement (25 and 80%), adhesive failure between post-cement (5 and 15%), cohesive failure with cement (10%), and mixed failure (15 and 75%) [9,10].

The smear layer (SL) is a disorganized, amorphous, and irregular structure formed by organic and inorganic components [11]. To eliminate and reach a successful penetration [12]

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Lei Shi



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