



Adhesive Luting in Ceramic Inlays and Porcelain Laminate Veneers

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Introduction

Ceramic inlays, composite inlay-onlays and porcelain or zircon laminate veneers rely to a great extent on the acceptable clinical performance of adhesive luting as it considered the weakest point of the indirect restoration [1,2]. Although most authors augment the opinion that bonding to enamel is more predictable and has better bond strength than bonding to dentin substrate, but it cannot completely depend on good enamel bond as a process of success of luting adhesive. An additional dentin bond is important not only for improvement the over-all bond strength but also to decrease postoperative hypersensitivities [3-6].

Many recent researches and literatures revealed that success or failure of direct resin composite restoration in clinical inspections and laboratory observations depends with a great extent on the quality of the adhesive system at the tooth restoration interface. Because of enamel nature and composition, enamel bonding has been predictable, while good bonding to dentin still remain questionable and more of challenge. This is due to dentin nature, wettability and its heterogeneous composition. All efforts of researchers and manufacturers were directed to create types of adhesive systems that provide reliable bond strength to both enamel and dentin substrates. However, Achievement of successful bonding between luting adhesive and dentin beneath indirect restoration is more challenge than do with direct restoration. One of the more dentist confused problem when facing the need for temporary luting for temporization that need for complete removal in the last visit prior to application of final adhesive resin cement. Insufficient removal of temporary cement may lead to dramatic reduction in final adhesive resin. Another problem that may face the clinician is how the light produced of light curing system can fully penetrate through indirect restoration [7]. Therefore, the approach of choice is dentin sealing prior to temporization. This technique is referred to as dual bonding [8], immediate dentin sealing [9,10], or resin coating technique. That is to decide that during the first visit, dentin hybridization could take place [11-13].

Results of some practical findings and clinical trials agreed with the approach that adopt the early hybridization at adhesive dentin interface and revealed its benefits related to increasing bond strength and minimizing the marginal gap formation in case of indirect restoration. Other studies given more sophisticated details about how to get maximal better results during the luting adhesive step that can be achieved by using a flowable liner together with a two-step self-etch adhesive has a better marginal integrity and well bond strength when using the adhesive alone to achieve early hybridization [14-16].

Clinical outcomes revealed that durable enamel bonding is still the effective factor in terms of well retention of indirect restoration. Further in vitro and in vivo studies and investigation should be done to evaluate the ability to carry out the etch-and-rinse technique after removal of the cured adhesive and flowable resin composite from the enamel margins prior to impression taking [14-18].

The latest trend in dental adhesives is universal bonding. Some examples are Scotchbond Universal (3M ESPE), Prime & Bond Elect (Dentsply Sirona), Clearfil™ Universal Bond (Kuraray), and All-Bond Universal (Bisco). The main advantage of that category is that Universal adhesives can use in all modes either etch&rinse mode, selective enamel etching mode and self-etch mode [19,20]. Another advantage may be



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that is not confined to bond to tooth structure substrates (Enamel & Dentin) but also can make chemical bonding to other substrates such as zirconia or ceramics [19,22,23].

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