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A review article of dental cement

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Abstract
Luting cements are the most currently used among dental practice, It works by connecting to objects together, Which in such case the tooth structure and the restoration, Two main uses of the luting agents: To keep the prosthesis in place, or to secure the orthodontic band in situ, the following article is a review of the updated concept of the dental cements.

Keywords: dental cements, luting agent, restoration, prosthesis

Introduction

A dental cement used to attach indirect restorations to prepared teeth is called a luting agent. A survey was conducted on 2001 indicated that the doctors recently are only using newer resin-modified glass-ionomer and resin luting materials based in the first place on the ease of use, retention and low to no post-operative sensitivity [1]. To put it in another way, the luting agent is required to hold the restoration in place for an unlimited period of time in order to fill the gap between the tooth and restoration. That is to say, the basic requirement that cement should contain mechanically and biologically is [2]:

1. It must not harm neither tooth structure or the tissue.
2. It must have an acceptable work time that allow the clinician to place the restoration.
3. It must be fluid fairly to permit the cement to flow and allow seating of the restoration.
4. It must form a hard mass quickly, so it could resist the functional forces.
5. It must not dissolve and stay in place sealing the and maintain the restoration.

The currently used luting materials are matching the requirements and showing a clinical success [3]. Moreover, the physical properties of the luting materials in the laboratory testing in comparison with the clinical performance not always anticipate each other [4].

Mechanical Properties

The luting cements are required to cope with all stresses during the function of the oral cavity in dry and wet. Stress which defined as changing the state of the material from a shape to a different shape. Which could be classified as: elastic deformation that could be recovered, plastic deformation that is unrecovered, and fracture [5]. The definite amount of stress applied against the luting cement are not simply calculated by dividing the stresses over the receiving area of the tooth preparation [6-13].

As well as, several studies have been showing cement microfracture is being the primary approach of failure, then catastrophic dislodgment of the restoration or tooth fracture comes after [14, 15]. Not only but also, one more study has shown that the microfracture occur just before the catastrophic failure clinically [16]. The microfracture would lead to a microleakage that by its rule will end up by pulp diseases and caries [17, 18]. When it comes to such a bacterial disease, it would be more difficult to correct, opposite to the dislodgment of the restoration that could be treated easily by re-cementation of the restoration over the tooth preparation. Provided that caries and crown dislodgment are being the most common two reasons of the crown and FPD failure [19, 20]. To give an illustration, few studies were conducted to compare different types of luting cement clinically, with result that showed zinc phosphate was showing the best performance, in comparison to zinc oxide eugenol that showed the worst [21, 22, 23]. Significantly, recent studies has introduced new types of cements, but limitations of these studies were either on the sample size or the duration [24, 25, 26, 27].

McLean conducted a study to note the importance of the stresses faced in various clinical situations using carboxylate cements. Result showed that failure would be great in post crowns and cantilevered FPD's in comparison to single crowns [28].

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