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Short Communication

Zirconia Based Restorations: Bonding or Cementation?

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Abstract

Adhesive luting is fundamental procedure for strengthening glass ceramics. Although the strength of crystalline ceramics is not affected by luting material. To overcome the problem of creating microporosity and providing adherence of resin luting agents to crystalline ceramics some methods have been proposed. Due to high fracture resistance and its composition which differs from silica based deramics, zirconia based restorations can be cemented conventionally.

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Zirconia has a dense and hard surface which gives higher resistance to wear. On the other hand its great surface stability creates several problems especially as regards the efficiency and duration of the chemical bond with the different adhesive systems. For that, Zirconia bonding is still questionable [1-4].

When it comes to Zirconia based restorations luting, bonding to resin cements is a key problem facing the use of crystalline ceramic restorations. Contrarily to silica based ceramics, its surface cannot be etched by hydro fluoric acid which is the usual chemical means to condition the surface. To overcome the problem of creating micro porosity and providing adherence of resin to crystalline ceramics, some methods have been proposed and advocated in the literature. They include applying primers containing acidic methacrylates, laser irradiation and deposing reactive silicate layers on the ceramic surface. The application of a tribochemical silica coating after airborne particle abrasion with 50-110 μm alumina particles at 0.25 MPa maybe a solution for Zirconia bonding. However, this would possibly create sharp crack tips, this makes structural defects a subject of concern regarding Zirconia resistance to possible radial cracking during function [5,6].

Generally, due to high fracture resistance and its composition which differs from silica based deramics, zirconia based restorations can be cemented conventionally, as recommended by some manufacturers, thus mechanically retaining them to the teeth. Moreover, in some instances high strength ceramic restorations do not require adhesive bonding to tooth structure and can be placed using conventional cements which ensure only a micro-mechanical retention. However, mechanical resin bonding is desirable in many clinical situations when the prepared tooth is unusually short [7,8].

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