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Annals and Essences of Dentistry

Short Communication

Methodologies and Therapeutic Applications for Dental Composites

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DESCRIPTION

Dental composite resins also referred to as "resin-based composites" or simply "filled resins," and are dental cements made of synthetic resins. Synthetic resins have developed into restorative materials as a result of their insoluble nature, good tooth-like appearance, insensitivity to dehydration, simplicity of manipulation, and low cost. The bulk of composite resins are composed of bis-GMA and other dimethacrylate monomers, a filler material like silica, and in most applications, a photo initiator. In order to generate specific physical properties like flowability, dimethylglyoxime is routinely used. Additional physical characteristics can be adjusted by producing specific concentrations of each component [1].

Modern composite resins are applied in bulk while still keeping good adaptability to cavity walls as they have low polymerization shrinkage and low thermal shrinkage coefficients. Composite placement demands precise attention to detail or it could fail too soon. During implantation, the tooth must be kept completely dry; otherwise, the resin may not stick to the tooth.

While still soft and dough-like, composites are applied; but, when exposed to light with a specific blue wavelength, they polymerize and solidify into the solid filler (for more information, see Light activated resin). Since the light frequently only reaches 2-3 mm into the composite, it is difficult to completely harden it. If too much composite is applied to the tooth, it will stay somewhat soft and this soft, unpolymerized composite may eventually cause free monomers to leak out, which may be poisonous, and/or the bonded joint to leak, which may result in recurrent dental pathology. A deep filling should be filled with composite in several stages, with each 2-3 mm portion being thoroughly cured before the next is added. Additionally, the physician must be cautious when adjusting the composite filling's bite, which can be challenging to achieve. If the filling is too high, even slightly, the tooth may become sensitive when being chewed on. A well-positioned composite is cosy, attractive, robust, and durable, and it might last for ten years or longer [2].

Aluminum oxide discs can be used to supply the composite resin with its ideal finish surface. Traditionally, Class III composite preparations had to have all of their retention points positioned in dentin. Because it was less likely to trap air in a restoration, composite resin was applied using a syringe. Physical retention is not necessary unless in the most extreme circumstances, according to popular wisdom, because bonding strength has significantly increased since dentin primers were introduced in the late 1990's. With the use of primers, the collagen fibres in the dentin can be "sandwiched" into the resin for a stronger physical and chemical contact between the filling and the tooth. However, until primer technology was established in the mid- to late-1990s, the use of composite in the dental industry was very contentious. To enhance look and expose the ends of the enamel rods for acid attack, the enamel edge of a composite resin preparation should be beveled. Before placing a composite resin restoration, the enamel should be well etched using a 30–50% phosphoric acid solution, completely rinsed with water, and dried using only air. All angles on the enamel cavosurface of a cavity that will be filled with composite resin and an acid etch process should be acute angles [3].

Varnish and zinc oxide-eugenol are contraindications for composite. Because of the significant occlusal wear in the 1980s and the beginning of the 1990's, composite resins were not suggested for Class II restorations. Composites are now more appealing for Class II restorations due to modern bonding processes and the declining prevalence of amalgam fillings. The use of composite for permanent Class II restorations is generally agreed to have appropriate wear and lifespan properties. There is disagreement over whether composite materials outperform Class II amalgam restorations in terms of durability and leakage and sensitivity [4].

CONCLUSION

Composite placement demands precise attention to detail or it could fail too soon. During implantation, the tooth must be kept completely dry; otherwise, the resin may not stick to the tooth. Since the light frequently only reaches 2-3 mm into the composite, it is difficult to completely harden it. If the filling is too high, even slightly, the tooth may become sensitive when being chewed on. To enhance look and expose the ends of the enamel rods for acid attack, the enamel edge of a composite

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