

Commentary

Description of pulp capping

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The pulp is made up of living connective tissue and cells called odontoblasts and is found in the centre of a tooth. The dentin–pulp complex includes the pulp. The health of the dentin–pulp complex is dependent on pulp cell activity and the signalling pathways that control the cell's behaviour, both during health and after injury.

Pulp capping is a dental restoration treatment that protects the dental pulp from necrosis after it has been exposed or almost exposed during cavity preparation, a severe injury, or a deep cavity that reaches the centre of the tooth, causing the pulp to die. All or most of the diseased and weakened enamel and dentin are removed when dental caries is removed from a tooth. Pulpitis can result if the pulp of the tooth is exposed or almost exposed as a result of this. Pulpitis can then become permanent, resulting in discomfort and pulp necrosis, needing root canal therapy or extraction. The ultimate goal of pulp capping, also known as systematic caries reduction is to preserve a healthy tooth pulp and avoid root canal surgery. Pulp caps are divided into two categories. In direct pulp capping, a thin layer of softened dentin is left in place and the protective dressing is placed on top of an exposed pulp; in indirect pulp capping, a thin layer of softened dentin is left in place and the protective dressing is placed on top of an exposed pulp. A direct pulp cap is a one-step operation, whereas stepwise caries removal is a two-step technique that takes approximately six months to complete.

The following materials have been reported as suitable direct pulp capping materials. Calcium hydroxide and mineral trioxide aggregate, on the other hand, are the preferred materials in clinical practise because to their favourable results.

Zinc oxide eugenol: In dentistry, zinc oxide eugenol is a common substance. ZOE's use as a pulp capping material is still debatable. Eugenol, which is cytotoxic to the pulp, is found in considerable amounts in this formulation. It also leads to a weak coronal seal, which causes micro-leakage, due to its non-adhesive nature. When compared to calcium hydroxide as a direct pulp capping material, studies have shown that ZOE has poor outcomes since it induces pulpal necrosis.

Glass and resin modified glass ionomer: For deep cavities with pulp in close vicinity, both Glass Ionomer (GI) and Resin Modified Glass Ionomer (RMGIC) have been frequently employed as a lining or base material. This is because of its high biocompatibility and adhesive qualities, which provide a coronal seal to prevent bacteria entry. They are not, however, a good alternative for direct pulp capping.

Adhesive system: 4-META-MMA-TBB adhesives and hybridising dentine bonding agents are examples of materials that fall under this category. It was two decades ago when the idea of using adhesive polymers for direct pulp capping was considered. Studies have shown that its vasodilating qualities induce bleeding, reducing the material's ability to form a coronal seal when employed as a pulp capping agent and reducing its polymerisation.

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