

ROOT CANAL SEALERS IN PRIMARY TEETH – A REVIEW

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Aim: To review the clinical outcome of various root canal sealers in primary teeth.

Objective: To compare the properties of different root canal sealers in primary teeth.

Background: Teeth with infected root canals, particularly those in which the infection has reached the peri radicular tissues, are a common problem in the primary dentition. Zinc oxide-eugenol cement (ZOE) has long been used as a root canal filling material for primary teeth. Nevertheless, ZOE cannot be considered the ideal root canal filling material because it presents limited antimicrobial action and it tends to resorb at a slower rate than the roots of the deciduous teeth. Concerns about these shortcomings of ZOE led to a search for other root canal obturating materials for deciduous teeth (e.g., materials like pastes containing iodoform, calcium hydroxide, or both).

Reason: To recognise the recommended root canal sealer for endodontic treatment of primary teeth in dental practice.

INTRODUCTION

Endodontic treatment constitutes as the last clinical resort for saving deciduous teeth in the oral cavity. It is done in cases where inflammation or increase in intracanal pressure, infection, or both, have irreversibly affected the pulp tissue, requiring radical or conservative treatments. In order to achieve success with endodontic treatment it is necessary that all phases be taken care of with the aim of maintenance or healing of the periradicular tissues, saving the deciduous tooth until eruption of its permanent successor. However, there may be occurrence of post operative pain if the pulp is not extirpated completely, or even if debris or some part of the instruments used are broken and left within the chamber. [1]

Zinc oxide eugenol has been largely used in pediatric dentistry since its discovery by Bonastre and its subsequent use in dentistry by Chisholm, [2] despite the drawbacks which have been cited in the literature time and again. Important requirements of a root canal filling material for primary teeth are that it should resorb at the same rate as the roots of a deciduous tooth. [3,4] It should not cause harm to both the periapical tissue and permanent tooth germ, resorb readily in the case of migration beyond the apex, radioopaque, antiseptic, should not shrink, should adhere to the walls of the canal, not cause discoloration of the tooth, and must be easy to fill as well as remove from the deciduous root canals, if required at any stage. [3-6]

Calcium hydroxide, Vitapex, and Metapex have been largely used as root canal filling material in primary dentition despite various disadvantages that are associated with these materials.

ZINC OXIDE EUGENOL

Pulpectomy for some time now has created a dilemma in the view of the clinician owing to the tortuosity of the root canals of a primary molar. [14] While meticulous biomechanical preparation determines the success or outcome of root canal treatment in permanent teeth, the resorbable nature and antimicrobial properties of the filling material decide the success of pulpectomy in a primary tooth. Preparation of the root canal in a deciduous tooth is based mainly on chemical means rather than mechanical debridement. [15]

Zinc oxide eugenol is the most widely used material for pulpectomy of the primary teeth. [16] Despite the high success rates, zinc oxide eugenol does not meet all criteria that are required for an ideal root canal filling material. Various studies [17,18] have reported delayed resorption of extruded material, deflected or ectopic eruption of succedaneous tooth, anterior crossbite, and palatal eruption following zinc oxide eugenol pulpectomy. Also other studies have reported immediate postoperative extractions in the zinc oxide eugenol group, which can be explained on the basis that zinc oxide eugenol is periapical irritant and utmost care should be taken to ensure material is not forced past the apex. [19] It has limited antibacterial activity. [10] It is important that root canal filling material used in primary teeth should destroy the microorganisms in periapical tissues as complete mechanical debridement is not possible due to the complexity of root canal system. [20]

ENDOFLAS

Endoflas paste has the property of limiting resorption to the excess material, which has been extruded. This is one of the advantages of using Endoflas over other root canal sealants. Resorption of the material does not take place within the

canal.[12] Thus, the material is neither resistant to resorption nor does it give rise to hollow tube effect. The manufacturing systems of endoflas paste claim that it has a broad spectrum of antibacterial efficacy. The material is hydrophilic and can be used in slightly humid canals. It has the ability to disinfect dentinal tubules and almost inaccessible accessory canals that cannot be cleansed mechanically. In addition, the components of the material can be removed by phagocytosis making it a resorbable material.[13] Despite the numerous advantages that endoflas has over zinc oxide eugenol, it is still not the most widely employed material for root canal filling in a primary tooth.

CONCLUSION

Despite the drawbacks of zinc oxide eugenol, it is still the most widely employed root canal material for the primary teeth. One of the main drawbacks of this study was time constraint. More studies should be carried out with a longer follow-up period to gain knowledge about long-term effects and the success rate of root canal sealants in primary teeth.

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