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**Review Article**

# Cavit- An Undervalued Samaritan – A Review

**Gitali Kumawat, Sanjeev Tyagi, Ritu Gupta, Hira Kausar, Geetika Arvind Yadav, Yash Jaiswal**
[1,2,3,4,5,6] *Department of Conservative and Endodontics,Peoples Dental Academy,Bhopal*

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ABSTRACT

Temporary restoration is mandatory in teeth undergoing endodontic treatment, to avoid any chances of microbial contamination from oral fluids, both during and post treatment.This need for temporization manifested many restorative materials that have been developed, researched, tested, and marketed.This review aims to analyse the various significant properties of the most widely used material-Cavit and its varieties and the technique of its placement during temporization.

## Introduction

Bacterial contamination is the most widely reported cause of pulpal and periradicular disease.[1]As a result, the primary goal of endodontic treatment should be to eliminate all the microorganisms from the tooth, and then, during and after treatment, attempting to keep the tooth disinfected by preventing any further microbial entry.

In modern times, root canal therapy of non-infected teeth can now be completed in a single visit, obviating the requirement for dressing and temporization.[2]However in many cases with infected canals require intracanal medicament in a multivisit treatment, which necessitates effective temporization for various time periods.[3]

The definitive coronal restoration is now not placed at the same visit as the root filling in many dental clinics. In most cases, if a specialist endodontist has performed the endodontic treatment, the definitive coronal restoration is not placed by the specialist, and the referring general dentist will complete this component of the treatment at a later date.[4]

Temporary filling materials must offer an appropriate seal against microbes, fluids, and organic materials ingress from the oral cavity into the root-canal system, while also preventing intracanal medicament seepage.[5]

Given the importance, literature reveals that the lack of adequate temporary restorations during endodontic therapy was placed second among the contributing variables in pain that persisted after treatment began.[6]

As a result of the need for temporization, many restorative materials have been researched, tested, developed, and marketed.

Based on the composition, temporary filling materials are classified as

1) Zinc oxide eugenol-based materials
2) Calcium sulphate- based materials
3) Glass ionomer materials
4) Composite resin-based materials

Among them, Cavit® (ESPE), a Calcium sulphate-based materialis the most popular and commonly utilised as it is simple to manipulate, available in premixed paste and

* Corresponding author*:* Dr. Gitali Kumawat, Dept.of Conservative Dentistry and Endodontics, People's Dental Academy, Bhopal.

can be removed quickly from access cavities after hardening.[7]

The aim of this review is to analyse the various significant properties of Cavit and its varieties and the technique of its placement during temporization.

Cavit

**Composition and setting**

• Cavit contains zinc oxide, calcium sulphate, zinc sulphate, glycol acetate, polyvinyl acetate, polyvinyl chloride-acetate, triethanolamine and red colour, but no eugenol. The setting process is triggered in part by saliva; the set is created by the reaction of water with calcium sulphate and zinc oxide-zinc sulphate.[8-9]

Marginal leakage

• Cavit has a high coefficient of linear expansion due to water sorption as a hygroscopic material. It has nearly twice the linear expansion of ZOE, which explains its exceptional marginal sealing capabilities. Thus, overcoming the marginal leakage superiorly over the other temporary materials.[10]

Body leakage

• Fresh samples of Cavit that were allowed to set in vegetable dye showed body discolouration, indicating dye sorption rather than body leakage.However, it was later discovered that this substance, even when allowed to set in water before being immersed in dye, showed body leakage. This was attributed to the highwater sorption nature of the material.[11,12,13]

Sealing ability

• Webber et al tested the thickness of Cavit required to prevent methylene blue dye leakage in- vitro. To prevent dye leakage, it was discovered that at least 3.5 mm of material was necessary.[10]

• Cavit outperformed temporary endodontic restorative material (TERM) and Intermediate Restorative Material (IRM), when it came to sealing performance in parallel or divergent class I cavity preparations.[14]

• When Cavit was utilised to temporise access cavities in anterior teeth in in-vivo investigations, no or minimal leakage was discovered in 27 out of 32 instances and only 15% of cases evaluated indicated gross leakage.[15] When compared to IRM and TERM, Cavit in a 4 mm thickness offered the best seal over a 3-week temporization period.[16]

• Cavit with a thickness of 2 mm was tested in monkey's anterior teeth during 2, 7, and 42 days. Over the course of the study, this thickness was ineffective in preventing bacterial microleakage, and the longer the Cavit remained in the mouth, the more bacterial contamination was observed.17Cavit's compressive strength is about half that of ZOE, hence there is always a requirement for sufficientbulk to provide anadequate seal as per available reports. Cavit's sealability was unaffected by temperature variations, showing strong dimensional stability.[18]

Contact with intracanal medicaments

• Cavit, intermediate restorative material (IRM), and zinc phosphate cement were tested for surface hardness after being exposed to metacresylacetate, camphorated Para chlorophenol, Formocresol, and normal saline solution for one to seven days. A Knoop hardness tester was used to assess the surface hardness. Cavit had a harder surface even after seven days as compared to day one.[19]

Varieties of Cavit

• Cavit-G and Cavit-W are Cavit variations that differ in resin content and, as a result, in hardness and setting. Cavit W (white) is medium set with lesser final hardness and increased adhesion. Cavit G (Gray) issoftest set which is completely removable without burs.

An impedance spectroscopy study revealed that Cavit and Cavit-W were found to create nearly similarfluid tightseals, which were much superior to Cavit-G.20

- Cavidentin is a calcium sulphate-based substance with a composition similar to Cavit but with the addition of potassium aluminium sulphide as a catalyst and thymol as an antimicrobialagent. Tamse et al. found that a 5 mm thickness of Cavidentin provided greater sealing performance when compared to IRM, Kalzinol, and Cavit in an in-vitro research.[21]
- Coltosol is a zinc oxide, zinc sulphate, and calcium sulphatehemihydrate-based material. According to the manufacturer, when Coltosol is exposed to moisture, the surface hardens within 20-30 minutes and the filling can be subjected to masticatory pressure after 2-3 hours. This material is recommended for temporization.

**Conclusion**

Above review showed many in-vitro studies providing convincing results of the effectiveness of calcium sulphate based endodontic materials. However, because the studies did not replicate the clinical setting and the functional demands that a temporary filling is subjected to, cannot claim much of clinical importance. Keeping in view the importance and concern for temporary restoration in endodontics, in-vivo studies replicating different clinical scenarios and cavity designs need to be conducted to reach at some conclusive protocol.Temporization during endodontic treatment should not be underestimatedand the material science in this regard should be emphasised further.

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