Water expandable root canal obturation system: A Review

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Commentary:
Recently developed water expandable root canal obturation system when contacts moisture in the root canals, absorbs water and expands laterally. Thus, it fills any spaces and voids in the root canal systems¹. It is composed of two parts system obturating points and resin-based sealant. For example, Propoint (C-Points) is an obturating point, smart paste Bio is a resin-based sealant². This recently developed obturation material expands laterally, but does not expand longitudinally in the axial direction by taking up water residues from the prepared root canal system. The pre-exerted stress on the hydrophilic polymer determines the degree of this expansion³. The obturating points gently expand and conform to the irregularities within the root canals in the initial four hours of its placement. As a result of this expansion, the polymer and sealer gets pressed inside the tubules of dentin⁴. This mild positive pressure towards the walls of root canals gives better sealing ability to the obturating material with the root canal wall, which further decreases any permeability of bacteria and their toxins within the root canal system and thus prevents microleakage of bacteria. This may decrease any probability of reinfection of treated cases and results in a higher success rate in long run⁵. The resin-based sealer is formulated so that it swells up by the addition of ground polymer. It contains bioceramic which gives dimensional stability. The setting reaction of sealer gives hydroxyapatite and calcium hydroxide as by-products which provide biocompatibility and antimicrobial activity to the material⁶. This type of water expandable root canal obturation system can solve some of the important problems related to the microleakage in the root canal system. This material can be considered in place of conventional obturation materials during endodontic treatment. Its use in endodontics will further enhance the root canal treatment outcomes. This poster attempts to provide a brief overview of the water expandable root canal obturation system and this poster does not promote any product and it is purely for educational purpose.

References

Keywords: Hydrophilic, Gutta-percha, Obturation, Root canal sealer, Smartpaste Bio

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