

Pulp Mummification Agents used in Dentistry

Reshmi B., Dr. Jayalakshmi

Saveetha Dental College, Chennai

Pulp mummification is a process in which the pulp is numbed in order to relieve pain during procedures. Pulp mummifying agents harden and dry the tissues of the pulp and root canal so that tissues are resistant to infections. [1] Pulpotomy is the removal of a portion of the pulp, including the diseased aspect, with the intent of maintaining the vitality of the remaining pulpal tissue by means of a therapeutic dressing.

PLUP MUMMIFYING AGENTS:

Iodoform; it is used in combination with tannic acid, glycerine, and eugenol. Paraform; its combination is with ZnO and glycerine

Liquid formaldehyde; it is combined with ZnO glycerine and LA. Some astringents such as tannic acid and cresol are also used. +

PROCEDURE FOR MUMMIFYING THE PULP:

Intracanal disinfection in permanent teeth: Isolate the tooth with a rubber dam. Clean, de-bridge and instrument the canals. Rinse and dry the canal spaces. Moisten a small cotton pellet with formocresol. Blot or wring any excess liquid from the pellet [2]. Place the cotton pellet in the pulp chamber and seal the access hole with a temporary filling material. Recall the patient after a minimum of 48 hours.

IODOFORM:

Is also known as triiodomethane a yellow crystalline solid belongs to the family of organic halogen compounds used as an antiseptic component of certain medications. It was first prepared in 1822 by electrolysis of aqueous solutions of acetone, inorganic iodides and sodium carbonates. It has no irritant action; it has disinfectant properties. Has a weak anaesthetic property and good antiseptic property. It decomposes to liberate iodine [3]. It is used with tannic acid, glycerine and Eugenol. Iodoform with combination of tannic acid, glycerine, phenol, eugenol, cinnamon used to mummify the pulp. It has slow liberation of iodine which leads to antiseptic and pain relieving properties.

PARAFORM:

It's a white amorphous powder with pungent odour, a polymer of formaldehyde. It's used as an obtundent of a sensitive dentin and as a dressing for root canals. As an obtundent, Paraform may be mixed with gutta-percha, mastic zinc phosphate or any of the temporary fillings, the dressing should be left for a week. [4] At the end of the time the cavity may be cut and procedures can be done. A small pain namely localised pain may occur which will not affect the tooth [5]. The insensitivity does

not extend to the pulp, the extent which it penetrates usually being about equal to the thickness of thick postcard.

Paraform should not be applied in irritant tooth or tooth near pulp.

FORMALDEHYDE:

Formaldehyde in dentistry is a classic example of the irrational fear, in the scientific community, of a substance that is present in every cell in the human body. There is significant controversy among formaldehyde researchers about the connection of formaldehyde to cancer in humans but one common theme seen in their research is that formaldehyde is a concern only in high concentrations [6]. Formaldehyde is an essential part of human cellular function. They are used during second stage of non vital pulpotomy.

PROCEDURE:

Caries are excavated after preparing cavity, if the pulp is exposed during excavation, make sure that the area is free of debris. Enlarge the cavity with a round bur.

A cotton pellet with formaldehyde is placed in exposure site and seal it for a week.

Paraformaldehyde liberates formaldehyde that permeates through the coronal and radicular pulp which then fixes the pulp.

CRESOLS:

Also called as hydroxytoluene are organic compounds which are methyl phenols. They are a widely occurring natural and manufactured group of aromatic organic compounds, which are categorized as phenols (sometimes called phenolics). [7] Depending on the temperature cresols can be solid or liquid because they have melting points not far from room temperature. Like other types of phenols, they are slowly oxidised by long exposure to air, and the impurities often give cresols a yellowish to brownish red tint.

MECHANISM OF ACTION:

Formocresol causes coagulation necrosis in tissues in immediate vicinity of the application with fixation tissues and microorganism.

ASTRINGENT:

They are locally applied protein precipitants. Their action is limited to cell surface.

On applying they form a protective layer, prevent irritation. They prevent inflammation. They are used in the form of paste. [8]

CONCLUSION:

The content of mummifying and antiseptic agents provides quick and painless treatment.

The dough mummifies the mouth part of pulp only. The apical part of pulp is not mummified, providing formation of root apical part in permanent teeth with non-formed roots. In multi-root canals the material provides antiseptic effect on pulp stump preserving its vitality.

REFERENCE:

1. Ranly DM. Pulpotomy therapy in primary teeth: New modalities for old rationales. *Pediatr Dent* 1994;16:403-9.
2. Levin LG. Pulpal regeneration. *Pract Periodontics Aesthet Dent* 1998;10:621-4.
3. Ibricevic H, Heyeraas KJ, Pasic Juhas E, Hamamdžić M, Djordjević N, Krnić J. Identification of alpha 2 adrenoceptors in the blood vessels of the dental pulp. *Int Endod J* 1991;24:279-89.
4. Ranly DM, García-Godoy F. Reviewing pulp treatment for primary teeth. *J Am Dent Assoc* 1991;122:83-5.
5. Fei AL, Udin RD, Johnson R. A clinical study of ferric sulfate as a pulpotomy agent in primary teeth. *Pediatr Dent* 1991;13:327-32.
6. A. Formaldehyde concentrations in the blood of rhesus monkeys after inhalation exposure. *Food Chem Tox* 1988. 26(8): 715-16.
7. Frank S J. A mathematical model for the absorption and metabolism of formaldehyde vapour by humans. *Tox Appl Pharmacol* 2005. 206(3): 309-20.
8. Swenberg, J A, Moeller B C, Lu K, Rager J E, Fry R C, Starr T B. Formaldehyde Carcinogenicity Research: 30 Years and Counting for Mode of Action, Epidemiology, and Cancer Risk Assessment. *Toxicologic Pathol* 2013. 41 (2):181-9.
9. International Agency for Research on Cancer. Formaldehyde monograph. 2012.
10. Bolt B M, Morfeld P. New results on formaldehyde: the 2nd International Science Conference (Madrid, 19-20 April 2012).
11. 12.. Pulp Symposium. *J Endo* 2008; 34(7S).
12. Casas MJ, Kenney DJ, Judd PL, Johnston DH. Do we still need formocresol in pediatric dentistry? *J Can Dent Assoc* 2005; 71(10):749-51.
13. Milnes A R. Persuasive evidence that formocresol use in pediatric dentistry is safe. *J Can Dent Assoc* 2006. 72(3): 247-54..
14. oj J R, Marco I, Cortes O, Canalda C. The acute nephrotoxicity of systemically administered formaldehyde in rats. *Eur J Pediatr Dent*. 2003; 4(1):16-20.