

## **FATE OF OVEROBTURATION IN PRIMARY TOOTH: A BRIGHT DESTINY OR A PEDIATRIC DOOM**

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### **ABSTRACT**

*Pulpectomy of the primary tooth is indicated when the radicular pulp is necrotic and the tooth needs to maintain the arch length and integrity. This study aims to access the knowledge, awareness and experience of specialized dentists through a validated questionnaire related to various obturating materials and their antimicrobial properties, toxicity and biocompatibility with the surrounding tissues. The success of obturating material depends upon complexity of tooth canal system, formation and resorption of the primary tooth root, the obturating material and technique used to provide a tight seal from the apical segment and cavo surface margin to prevent reinfection. 53 % of the post graduate dentists were aware that overobturation with zinc oxide eugenol remnants cause anterior crossbite, palatal eruption and ectopic eruption of the succedaneous teeth.*

**KEYWORDS:** *Primary Tooth, Pulpectomy, Obturating Materials*

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### **INTRODUCTION**

In 1932 pulpectomy was advocated for the first time for retaining primary teeth which otherwise would have been lost.<sup>1</sup> The greatest challenge for a successful pulpectomy in a primary molar is the complex anatomy, tortuous ribbon shaped anatomy and physiological resorption of roots as chemico mechanical therapy is insufficient to disinfect all bacteria from the root canals.<sup>2</sup>

The main objective of pulpectomy is to retain tooth for mastication, phonation, swallowing and preservation of space and firstly resolution of infection within 6 months, secondly radiographic evidence of successful obturation without gross over extension or under extension, and thirdly clinically asymptomatic and natural resorption of the teeth leading to normal eruption of the succedaneous teeth.<sup>3</sup> The various obturating materials used for primary tooth are Calcium hydroxide and Iodo form combination (Metapex, Vitapex), Endoflas., zinc oxide plus propolis or ozonated oil, Guedes Pinto paste, Rifocort, Calcen paste and herbal derivatives which have been introduced as an alternate to traditional zinc oxide eugenol.<sup>4</sup>

The aim of this study was to assess the knowledge awareness and practice of specialist dentist related to various obturating materials and their fate of resorption and consequences when over obturated.

## MATERIAL AND METHODOLOGY

A cross sectional study was carried on 70 post graduates and faculty of Government Dental college Srinagar and Pedodontists of ITS dental college and Noida who were contacts of the investigator using a validated questionnaire (Table 1) that included demographic details and survey items to evaluate the knowledge, attitude, experience and awareness regarding fate of obturation and over obturation in a primary tooth. The data was analyzed using the survey tool monkey application and graphs were obtained.

**Table 1 Questionnaire**

S.No	QUESTION	A	B	C
1.	What is your gender?	Male	Female	
2.	Qualification	Undergoing MDS in Pedodontics	MDS in Pedodontics and Preventive Dentistry	MDS in other fields
3.	Are you aware of Rifkins criteria of obturating material?	Yes I am aware	No I am not aware	I have heard about it somewhere
4.	What material is the gold standard for obturating in a primary tooth?	Zinc oxide eugenol	Endoflas	Metapex
5.	Endoflas is an ideal obturating material in resorbed roots because	It resorbs periapically and intraradicularly but not within the canal	It resorbs periapically intraradicularly and within canal too	It resorbs within canal but not in the extruded area
6.	When zinc oxide eugenol is extruded apically what is the fate?	Necrosis of cementum bone and inflammation of periapical tissue	Alters path of eruption of succeedaneous tooth	Both of the two
7.	Which of the following ia a sequence of antimicrobial activity of obturating material?	Endoflas>ZnO>Calcium hydroxide plus chlorhexidine>Metapex>Saline	Zinc oxide >Endoflas>Calcium hydroxide>Saline>Metapex	Calcium hydroxide>ZnO>Endoflas>Metapex>Saline
8.	Who recommended addition of other materials to calcium hydroxide improves its properties?	Colla J in 1982	Fuks in 1982	Sweet in 1982

**Table 1 Contd.,**

9.	Vitapex is said to be more effective and advantageous than ZOE because?	It produced a greater decrease in abnormal tooth mobility and in pre existent bone radiolucency	It resorbs at the rate of the deciduous root	Both of the two
10	Anterior cross bite, palatal eruption and ectopic eruption of succedaneous tooth occurred if remnants were left of which of the following obturating materials?	Endoflas	Zinc oxide	Both of the twos

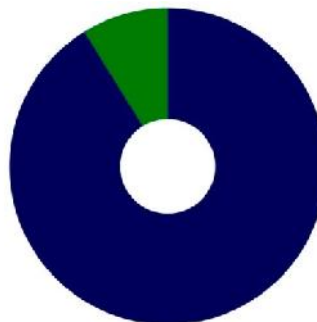
**Table 2: Percentage and Number of Specialized Dentists who Gave option a, b and c**

QNO	A % (n)	B% (n)	C %(n)	SKIPPED
1.	9% (6)	91% (62)		2
2.	34% (24)	37% (26)	29% (20)	
3	44% (30)	41% (28)	15% (10)	2
4	44% (30)	32% (22)	24%(16)	2
5	53% (36)	35%(24)	12%(8)	2
6	15% (10)	6% (4)	79%(54)	2
7	67% (44)	12% (8)	21% (14)	4
8	44%(28)	41%(26)	16%(10)	6
9	3%(2)	38% (26)	59% (40)	2
10	9% (6)	53% (36)	38%(26)	2

**RESULTS**

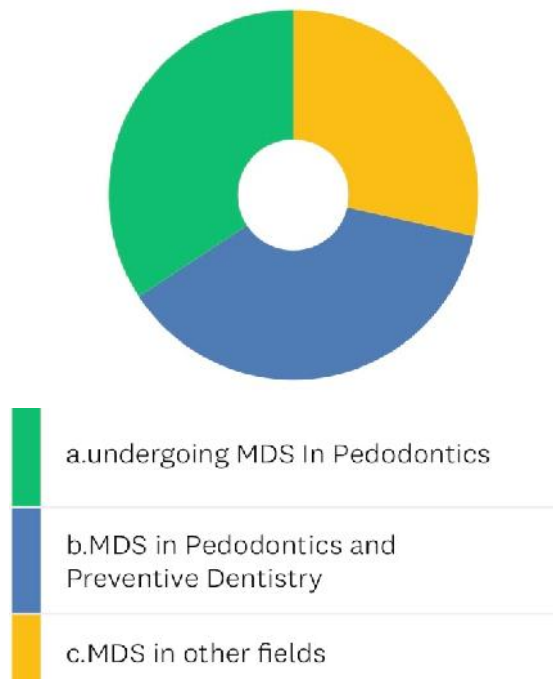
A total of 10 already pre tested close ended questions were whatsapped to 70 post graduates and faculty members of Government Dental College Srinagar and Pedodontist of ITS Dental College and Hospital, Greater Noida who were trained to do an endodontic obturation in a primary tooth in the month of April 2021 to July 2021. Ethical clearance was taken before commencing the study.

91 Percent of the respondents were female dentist and 9 % were male post graduates (**Table 2**) (**Figure 1**).



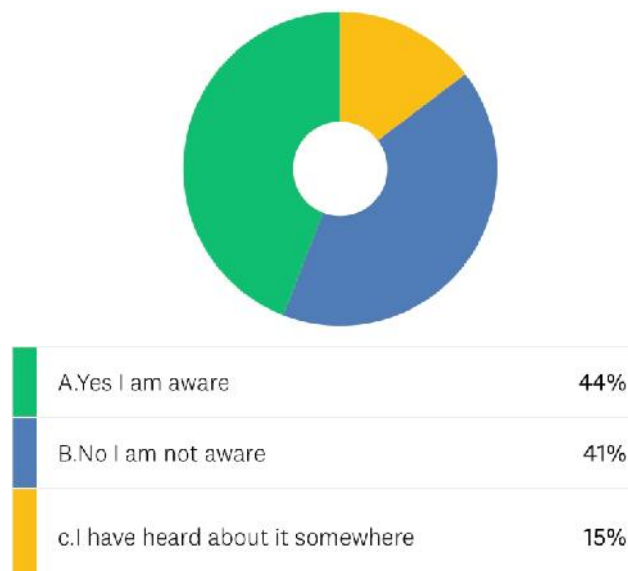
**Figure 1**

34 Percent of the sample were doing post graduation in pedodontics and preventive dentistry and 37% were specialized pedodontists (Figure 2).



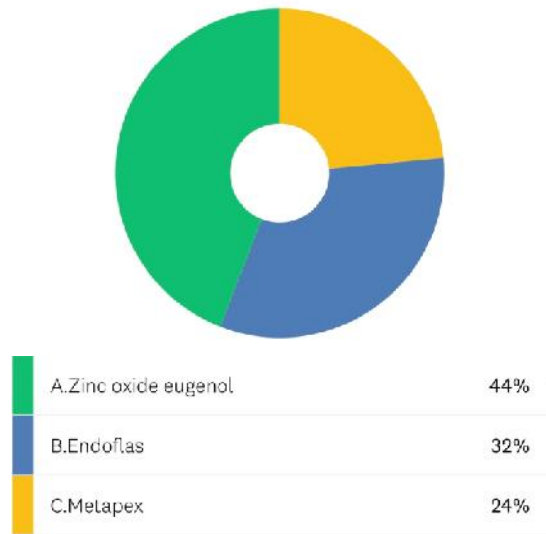
**Figure 2**

3) 44 Percent of the respondents were aware of the Rifkins criteria of obturating material and its properties (Figure 3)



**Figure 3**

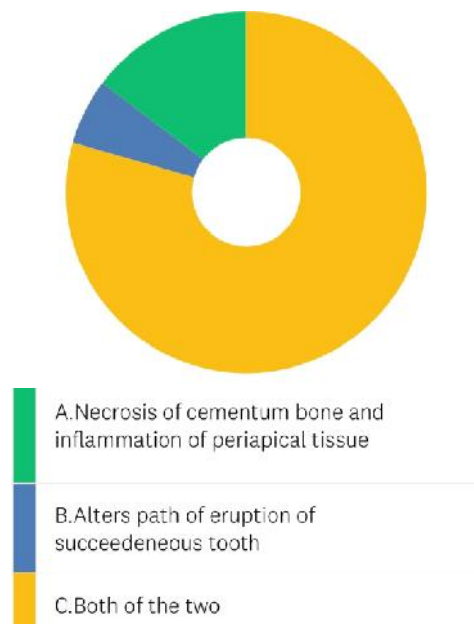
44 Percent of the dental post graduates were totally aware that zinc oxide eugenol is the gold standard for obturating a primary teeth (Figure 4).



**Figure 4**

53 Percent of the dentists were aware that Endoflas is the primary and ideal material for obturating in a resorbed root as it resorbs peri apically, intra radicularly and within the canal too (Table 2).

Though being the gold standard zinc oxide eugenol has drawbacks that it causes necrosis of the cementum, bone and inflammation of periapical tissue and alters the path of eruption of the succeedeneous tooth and 79% of dental specialists were aware about it (Figure 5).



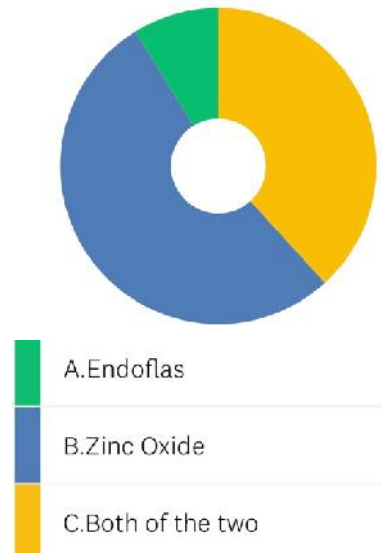
**Figure 5**

67% of post graduate dentist were also well aware of the sequence of antimicrobial efficacy of the various obturating material (Table 1, Q7).

Only 44 percent of dental post graduates were aware that addition of some materials to calcium hydroxide improves the properties as suggested by Colla J in 1982 (Table 2).

It was seen that 59 percentage of dentist were aware that Vitapex is said to be advantageous than zinc oxide eugenol (Table 2).

Also 53 % of the post graduate dentist were aware that zinc oxide eugenol causes anterior crossbite, palatal eruption and ectopic eruption of the succedaneous teeth if the remnants were left (Figure 6).



**Figure 6**

## DISCUSSIONS

Rifkin identified the ideal criteria for obturating materials which includes the obturant to be resorbable, antiseptic, radiopaque, should have ease in inserting and removing and should be non irritating and non inflammatory to underlying permanent tooth germ.<sup>5</sup>

Sunita B et al conducted a study check the resorption of extruded obturating material in a primary teeth where zinc oxide eugenol is said to be the gold standard operating material but it's not indicated in resorbed root and it was discovered first by Bonastre and Chisholm.<sup>6</sup>

Garcia Godoy in 1987 found that KRI paste resorbs from the apical tissue in a week or two and it doesn't set up to a hard mass thus could be easily inserted and removed.<sup>7</sup>

Smart seal is a recently introduced root canal operating material based on polymer technology which uses hydrophilic principle to absorb surrounding moisture and expands resulting infilling of voids and spaces.<sup>8</sup>

Navit S et al evaluate the inter microbial efficacy of various obturating material against *E. faecalis* where Endoflos have the highest zone of inhibition than zinc oxide eugenol or calcium hydroxide.<sup>9</sup> Endoflas demonstrated high success both clinically as well as radiographically when compared to novel combination of zinc oxide powder and nano hydroxyapatite with saline as an obturating material.<sup>10</sup>

Khairwa A et al noted a good radiographic and clinical success was seen when a primary tooth was endodontically treated with a mixture of zinc oxide powder and aloe vera gel.<sup>11</sup>

Colla J found zinc oxide not only alters the part of eruption of succedaneous permanent tooth but also Erasquin noted necrosis of cementum, bone and inflammation of the surrounding periapical meaning tissue when remnants of obturating material are left.<sup>12,13</sup>

## CONCLUSION

No obturating material is completely ideal for a primary teeth however we select such a material which resorbs at the speed of the tooth. It's always advisable to select a material which doesn't cause any periapical damage to the tissues intra radicularly or extra radicularly. Endoflas is seen as a superior option to the gold standard zinc oxide eugenol for the obturation of infected primary molars. 53 % of the post graduate dentist were aware of the overobtured tooth with zinc oxide eugenol were remnants causes anterior crossbite, palatal eruption and ectopic eruption of the succedaneous teeth.

## REFERENCES

1. *Mortazavi M, Mesbahi M. Comparison of zinc oxide and eugenol and Vitapex for root canal treatment of necrotic primary teeth. Int J Pediatr Dent 2004;14: 417-424*
2. *Nalawade HS, Lele GS, Walimbe H. Outcome of zinc oxide eugenol paste as an obturating material in primary teeth pulpectomy. A Systematic review. J Dent Res Rev 2017;4:90-96*
3. *Ahmed H M. Pulpectomy procedures in primary molar teeth. Eur J Gen Dent 2014;3:2-10*
4. *Rajsheker S, Mallineni SK, Nuvvula S. Obturating materials used for pulpectomy in primary teeth- A Review. J Dent Craniofac. 2018 ;3(1):1-9*
5. *Rifkin A. The root canal treatment of the abscessed primary teeth: A three to four year follow-up. J Dent Child 1982;49:428-431*
6. *Sunitha B et al. Resorption of extruded obturating material in primary teeth. Indian journal.2014;3(1):1-9*
7. *.Garcia Godoy F.Evaluation of an iodo form paste in root canal therapy i for infected primary teeth.JDC 1987; 54 :30 -34.*
8. *Kannan R, Mathew MG. Pediatric obturating materials-a review. 2019;11(1): 221-224*
9. *Navit S et al. antimicrobial efficacy of contemporary obturating materials used in primary teeth -an in vitro study. JCDR.2016; 10(9):ZC09-ZC12*
10. *Kottapali P et al. Clinical and radiographic evaluation of mixture of zinc oxide powder and nano hydroxyapatite as an obturating material in primary molars. Braz dent science.2019; 22(1):63-69*
11. *Khairwa A et al.Clinical and radiographic evaluation of zinc oxide with aloe Vera as an operating material in pulpectomy: an invivo study. JISPPD. 2014;32(1) :33-38*
12. *Colla J, Sadrian R. Predicting pulpectomy success and its relationship to exfoliation and succedaneous dentition. AAPD 1996; 18 (1) :57 - 63*
13. *Erasquin J, Muruzabal M. Root canal filling with zinc oxide eugenol in the right molar.OOO 1967;24:547-558*

