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Compare ZOE, Zinc Oxide Powder with A. Vera Gel and Metapex in Primary Teeth- A Clinical Study

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ABSTRACT

Background: The present study was conducted to compare ZOE, zinc oxide powder with A. vera gel, and metapex in primary teeth. **Methods**: This study was conducted on 45 patients with chronic infection in mandibular second molars. Patients were divided into 3 groups pf 15 each. Group I teeth were obturated with ZOE paste, group II with zinc oxide powder with aloe vera gel and group III with metapex. Clinical success and radiographic success was evaluated. **Results**: There were 14 cases in group I, 13 in group II and 15 in group III which had success and 1 in group I and 2 in group II which showed failure. There were 13 cases in group I, 11 in group II and 12 in group III which had success and 2 in group I and 4 in group II and 3 in group III which showed failure. **Conclusion**: Authors found that zinc oxide powder with A. vera gel can be used as alternatives to ZOE and metapex as an obturating material in primary teeth.

Keywords: Obturation, metapex, zinc oxide powder.

INTRODUCTION

Pulp therapy for pulpally involved primary teeth continues to be a challenge to clinicians. The success of pulpectomy depends on accomplishment of all operative procedures following specific treatment guidelines and the choice for biocompatibility materials.[1] It can also produce negative impacts on the child's oral health-related quality of life through pain, difficulty in mastication, and absentia from school.[2] An obturating root canal filling material for primary teeth should be antibacterial, resorble at the same rate of the root, non –inflammatory and non-irritating to the underlying permanent tooth germs, and harmless to the periapical tissues and successive developing tooth buds, easy to insert, must adhere to walls, must not shrink, must readily resorb if passed beyond the apex, be easily removed when needed, be radio-opaque, and cause no discoloration of the tooth. At present, there is no such ideal material that meets all the requirements.[3]

Zinc oxide eugenol (ZOE) has been the material of choice for filling the root canals of deciduous teeth, and until 2008, it was the only material explicitly recommended in the clinical guidelines development by the American Academy of Pediatric Dentistry (AAPD). In 2009, based on studies recently published, the AAPD Guidelines currently, there is a growing preference for using iodoform paste and Ca (OH)2 (metapex and Vitapex) instead of ZOE paste probably because of its irritant to potential to periapical tissues and slow resorption.[4]

Numerous in vitro studies have proved the efficacy of Aloe vera as a good antibacterial agent against resistant microorganisms found in pulp space and its effective role in bone regeneration. Hence, A. vera has shown to be a promising obturate material in primary teeth.[5] The present study was conducted to compare ZOE, zinc oxide powder with A. vera gel, and metapex in primary teeth.

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MATERIALS AND METHODS

This study was conducted in the department of Pedodontics. It comprised of 45 patients with chronic infection in mandibular second molars of both genders. All were informed regarding the study and their consent was obtained from their parents. Ethical approval for the study was also obtained.

Dara such as name, age, gender etc. was also recorded. Patients were divided into 3 groups pf 15 each. Group I teeth were obturated with ZOE paste, group II with zinc oxide powder with aloe vera gel and group III with metapex. Pulpectomy and obturation was done as as instructed by manufacturer as per standardized protocol. Teeth were evaluated both clinically and radiographically at 3rd, 6th, and 12th month intervals postoperatively. Clinical success was based on the presence of normal mucosa without abnormal mobility, pain, or sensitivity to percussion. Radiographic success was associated with a decrease in the size of radiolucency and the presence of bone regeneration. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table 1: Distribution of teeth

Groups	Group I	Group II	Group III
Materials	ZOE	Zinc oxide powder with aloe vera gel	Metapex
Number	15	15	15

[Table 1] shows that group I had ZOE, group II had Zinc oxide powder with aloe vera gel and group III had metapex as obturating material. Each group comprised of 15 teeth.

Table 2: Clinical treatment outcome in all groups

Groups	Success	Failure	P value
Group I	14	1	0.91
Group II	13	2	
Group III	15	0	

[Table 2, Figure 1] shows that there were 14 cases in group I, 13 in group II and 15 in group III which had success and 1 in group I and 2 in group II which showed failure. The difference was non-significant (P> 0.05).

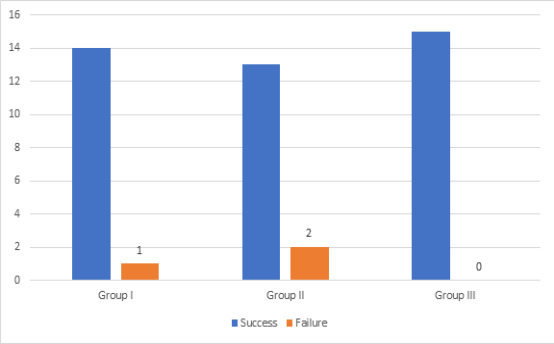

Figure 1: Treatment outcome in all groups

Table 3: Comparison of radiographic out comes in all groups

Groups	Success	Failure	P value
Group I	13	2	0.08
Group II	11	4	
Group III	12	3	

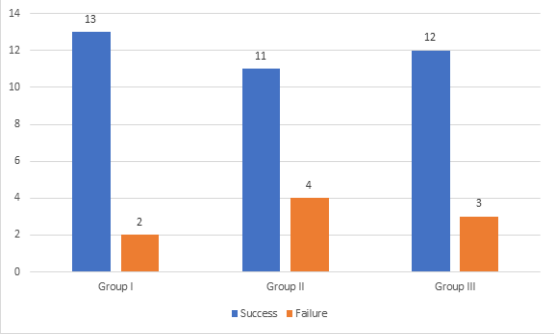

Figure 2: Comparison of radiographic out come in all groups

[Table 3, Figure 2] shows that there were 13 cases in group I, 11 in group II and 12 in group III which had success and 2 in group I and 4 in group II and 3 in group III which showed failure. The difference was non- significant (P> 0.05).

DISCUSSION

Maintaining the integrity of primary teeth in the oral cavity is one of the major goals of dentistry. Preserving the primary teeth is important for maintaining the arch length.[6] It is important to maintain the vitality of the primary teeth but a tooth without a vital pulp can also remain clinically functional. Pulpectomy is one of the treatment options for severely decayed primary teeth.[7] Successful root canal therapy is dependent upon the quality of obturation of the root canal system. Various endodontic obturation techniques are available to save the tooth. The material can be carried to the canal using lentulospiral; pushed into the canal in bulk using cotton pellet; applied by using an endodontic pressure syringe.[8] Many investigations have been carried out to evaluate and compare the success rate of different root canal filling materials used for primary teeth. Previous in vitro investigations of methods of obturation in primary teeth showed good performance of the lentulo spiral over other technique.[10] The present study was conducted to compare ZOE, zinc oxide powder with A. vera gel, and metapex in primary teeth.

In this study, group I had ZOE, group II had Zinc oxide powder with aloe vera gel and group III had metapex as obturating material. Each group comprised of 15 teeth. Goinka et al,[11] in their study pulpectomies were performed on 51 primary second molar in 55 children, aged between 4 and 9 years, of these, 24 children were randomly divided into three groups of 17 teeth each selected for endodontic treatment. Obturation was done with a mixture of ZOE paste, metapex and A. vera gel with ZOE powder. Clinical, radiographic evaluation was done after 3 months, 6 months, and 12 months. The three pastes achieved convergent clinical and radiographic success within the three observation periods (P > 0.05). ZOE paste was the slowest in its resorption. Zinc oxide powder with A. vera gel can be used as alternatives to ZOE and metapex.

We found that there were 14 cases in group I, 13 in group II and 15 in group III which had success and 1 in group I and 2 in group II which showed failure. There were 13 cases in group I, 11 in group II and 12 in group III which had success and 2 in group I and 4 in group II and 3 in group III which showed failure. Jermaih et al,[12] evaluated and compared the quality of obturation between the two tested methods for root canal filling with a newer system in primary teeth. A total of 104 canals were prepared and obturated using zinc oxide eugenol paste. The three delivery systems compared were: Rotary lentulospiral and Navitip® withNavitip® Double Sideport. Radiographs were used to

evaluate the canals for length of obturation and presence of voids. Significant differences was seen between the three groups for the presence of voids (p value =0.042) with less voids in Navitip® Double Sideport. There were no difference between the three groups for the extent of filling (p value=0.170). Navitip® Double Sideport showed the better results in terms of extent of obturation and absence of voids when compared to the Rotary lentulospiral and Navitip®.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that zinc oxide powder with A. vera gel can be used as alternatives to ZOE and metapex as an obturating material in primary teeth.

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