

A Comparative Evaluation of Single Visit Verses Multiple Visits Endodontics Therapy in Primary Molars

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ABSTRACT

Background: Despite modern advances in the prevention of dental caries and an increased understanding of the importance of maintaining natural dentition, many teeth are still lost prematurely. The quest for an effective scientifically supported one-visit procedure has been approached from principally two angles: (1) the exclusion of an antibacterial intra canal dressing and (2) the inclusion of a short-time dressing. The single and multiple visit endodontic therapy was more in multiple visit procedure, being statistically significant ($p > 0.05$).

Keywords: One visit, multiple visit, endodontic therapy, dental caries, prevention.

INTRODUCTION

Dentistry has evolved from the days of "Pull and Be damned" to the present day concept of total prevention. Dental caries is the most prolific disease of the primary dentition. Morphologic variations and improper oral hygiene practices make deciduous dentition more prone to the vagaries of dental caries leading to early involvement of pulp.¹ Despite modern advances in the prevention of dental caries and an increased understanding of the importance of maintaining natural dentition, many teeth are still lost prematurely. The early loss of primary and permanent teeth paves the way to the malocclusions, loss of esthetics, phonetic problem and psychological problems.

With the evolution of newer techniques, instruments, materials and better understanding of the canal anatomy, the face of endodontics has totally changed. Historically root canal treatment was performed in multiple visits mainly to ensure sterility of root canal system prior to obturation. As complete sterilization was not possible with biomechanical preparation and irrigation, intracanal medicaments were used to ensure the complete eradication of bacteria.³ Cleaning and shaping procedures are some of the most important

phases in root canal therapy (Schiider 1974, Gutmann&Dumsha 1987).^{2,3}

The quest for an effective scientifically supported one-visit procedure has been approached from principally two angles: (1) the exclusion of an antibacterial intra canal dressing and (2) the inclusion of a short-time dressing. All these investigations used the former approach for the one-visit treatment.⁴ The purpose of this randomized controlled clinical study was therefore to compare and evaluate the clinical & radiographic parameters of single versus multiple visit endodontic therapy in primary molars.

MATERIALS AND METHODS

The present clinical study was carried out in the Department of Pediatric and Preventive Dentistry, Maharishi Markandeshwar College of Dental Sciences and Research, Mullana, Ambala, with the main aim of comparing the success rate of single visit and multiple visit endodontic therapy in primary molars.

The children were selected in the age group of 4 to 8 years. After consent, confining the criteria clinically and radiographically. Then the teeth were included

Received: Mar. 20, 2018: Accepted: June. 23, 2018

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Primary second molar: Single visit.

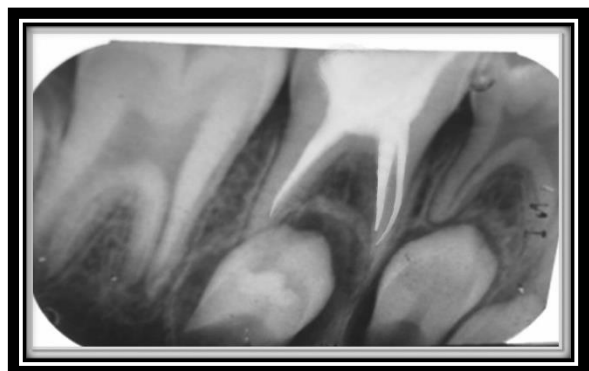


Fig 1: Immediate Post obturation.



Fig 2: 9 Months post obturation.

for partial pulpectomy. The simple random technique were used to assign the children into the Groups . For each tooth, in every group at the first visit, local anaesthetic were administered and under rubber dam isolation, access cavity preparation was carried out. The negotiation of the canals was done with #15 K-File and diagnostic radiograph was taken for working length determination.

Group I (single visit) primary molars

Group A- Study Group

Following the above initial procedure, negotiation of the canal with k-file and cleaning and shaping of the canals was done and the canal was enlarged using #15 H-File up to a maximum of 35 size respectively. Irrigation with 3% sodium hypochlorite and normal saline were continuously done throughout the instrumentation. The canals were then dried by using paper points and were obturated with Metapex, (supplied in a pre-packed

Primary second molar: Multiple visit.

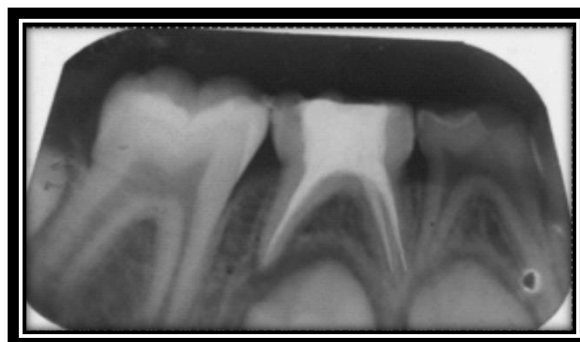


Fig 3: Immediate Post obturation.

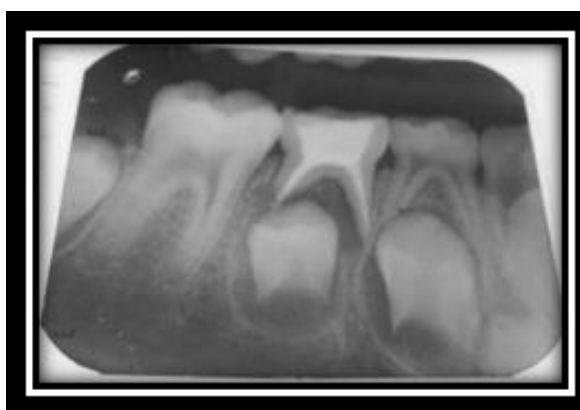


Fig 4: 9 Months post obturation.

polypropylene syringe) through incremental method on first visit .

A thicker mix of ZOE (dry putty like consistency) was placed in the pulp chamber as a temporary sealing material and post treatment radiograph was taken. Cavity was sealed with GIC or posterior composite after obturation.

Group B : Control group

The same protocols were followed as stated for Group I A ,the only difference being that the canals were obturated with ZOE (Zinc oxide Eugenol mixed - 0.36 gm powder, 0.28gm liquid) through incremental method using lentulo spiral or hand plugger on the first visit.

Group II: Multiple Visits for primary molars

Group A: Study Group

In multiple visit Group same protocol was followed, after negotiating the canal with k-file then cleaning

Table 1: Protocol of Treatment

SN	Mode of therapy	Material Used	Primary Teeth
1.	Single visit	A- Metapex	8
		B- ZOE	8
2.	Multiple visit	A- Metapex	8
		B- ZOE	8

Table 1: Evaluation of Single versus Multiple Visit Pulp Therapy for postoperative flare-up at different follow up periods

Time interval	Single visit (n=16)		Multiple visit (n=16)		Statistical Significance (Mann Whitney U test)	
	Mean Score	SD	Mean Score	SD	Z	P
24 hr	0.25	0.68	0.50	0.89	0.892	0.564
48 hr	0.38	0.81	1.13	1.02	2.156	0.073
72 hr	0.75	1.00	1.13	1.02	1.046	0.381
1 week	0.80	1.01	1.13	1.02	0.890	0.446
1 month	0.75	1.00	1.13	1.02	1.046	0.381
3 months	0.75	1.00	1.07	1.03	0.871	0.470
6 months	0.75	1.00	1.13	1.02	1.046	0.381
9 months	0.75	1.00	1.13	1.02	1.046	0.381

and shaping of the canals was done and closed dressing was given to promote periradicular healing by removing necrotic pulp.

In 2nd appointment, patients were recalled after 7 days, interappointment dressing was removed and same protocols were followed for obturation.

Group B : Control group

The same protocols were followed as stated for Group II A, the only difference being that the canals were obturated with ZOE (Zinc oxide Eugenol mixed - 0.36 gm powder, 0.28gm liquid).

The following post obturation parameters were evaluated radiographically at 1mth, 3mnths, 6mths,

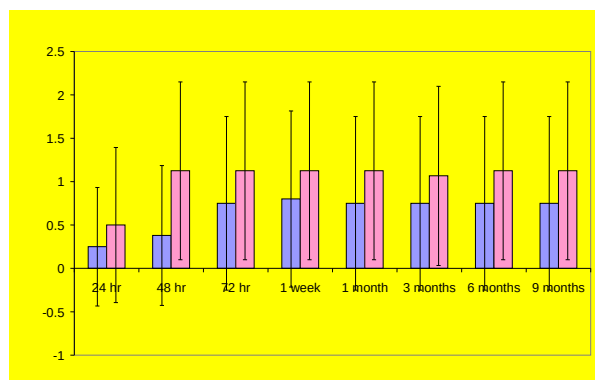
9mths by using (PAI SCORE). The data collected were Grouped , tabulated and statistically analyzed

RESULT

Hence primary teeth for both single and multiple visits – a total of 8 teeth each were treated with Metapex and ZOE. At all the time intervals, mean flare up score in single visit group was lower as compared to that in multiple visit group, the difference between two groups was significant statistically.

DISCUSSION

In primary teeth, treatment of infected pulp presents a unique challenge to the dental clinicians.



Graph 1: Graph comparing mean score single visit and multiple visit.

Prior attempt at treating pulpally involved teeth were restricted to the pulp chamber and involved removal of the content followed by placing a medicament over the radicular pulp stumps, for a varying period of time.⁵ Subsequently, modified pulpotomy technique involving partial removal tissue were suggested (Tronstad 1988).⁶

Pulp therapy for primary teeth has historically been a topic of debate. In recent years, a most heated discussion has emerged as to the need for more than one treatment session in endodontics. In fact, the attempt to complete root canal treatment in one visit has been documented before the beginning of the twentieth century (Dodge 1887).⁷ Traditionally, the treatment has been divided into two or more appointments before the placement of a permanent filling, allowing the clinician to enhance root canal disinfection, to increase patient comfort, and also to evaluate the progress of healing (Trope and Bergenholtz, 2002).⁸ The major difference distinguishing the single-visit from the multiple visit procedure is the completion of the entire process in a single visit. In northern part of India, most of the studies comparing the success rate of endodontic therapy performed in one or more sessions have not been appropriately structured. Therefore, this randomized clinical study aimed to compare the outcomes of single- versus multiple-visit root canal treatment.

Maxillary and mandibular molars were selected, Similar criteria has been adopted by majority of studies combine single and multi-rooted teeth. (Harty 1970, cvek M 1972, Lambjerg 1974, Bystrom A 1987, cvek M 1992, Sjogren U 1997).^{5,9,10}

The materials used for single and multiple visits were Metapex for Study group and Zinc Oxide Eugenol for Control group in the primary dentition. More recently, the Metapex (mixture of calcium hydroxide and iodoform) is being used to obturate root canals of primary teeth. It has been used as a root canal filling material in primary teeth with considerable success (Rosendahl R. and Weinert Grodd A., 1995)¹¹.

Success rates of Holan and Fuks (1993)¹² noted 65%, Nadkarni and Damle¹³ noted 88.57%, Mortzavi and Mesbahi (2004)¹⁴ noted 78.5% success rate with ZOE at the 10–16 month follow-up period. Thus, we have taken 9 months of follow-up period starting from 1 month, 3 month, 6 month and last follow-up at 9 month for primary dentition. For permanent dentition, till 6 months, follow-up period was done.

In the present study, the incidence of **pain in the primary dentition** while comparing the single and multiple visit endodontic therapy was more in multiple visit procedure, being statistically significant with the use of Zinc Oxide Eugenol($p>0.05$), while it was found to be non significant with the use of Metapex($p=0.442$). However, the overall mean pain score for combined use of Metapex and Zinc Oxide Eugenol was found be statistically significant, with the mean pain score being 0.75 for Single Visit and 1.13 for Multiple Visit procedures.

Mulhern *et al*¹⁵ and Di renzo *et al*¹⁶ in their studies and in a recent study conducted by C.Wang *et al*¹⁷ on 100 vital teeth, no statistically significant differences were found between the pain levels of teeth treated in single and multi visit group. According to Soltanoff 1978¹⁸, Albashaireh & Alnegrish 1998¹⁹, Eleazer & Eleazer 1998²⁰, Al-Negrish & Habahbeh 2006²¹, no significant difference in postoperative pain has been found when one-visit.

Sumita B (2013)³who reported no significant pain after 2 weeks, but in teeth with periapical lesion 16% had mild pain in single visit. This was similar to findings of Fox *et al* and Sathorn *et al*²²—who reported a higher percentage of pain in non-vital teeth without lesion. On the contrary Mulhern *et al*¹⁵ reported 26.7% of non-vital teeth with lesion had pain and none in non-vital teeth without lesion.

In this study, various variables were considered separately to explore the potential influence on the incidence of post-obturation outcome. Hence, on comparing various groups statistically significant difference was seen in the incidence of postoperative pain, discomfort and perapical when ideal obturating material was considered. A definite conclusion cannot be drawn out from a study carried out on a smaller sample size. Therefore, to lead to a explicit conclusion, the teeth treated in this study need to be monitored until their eventual exfoliation and a further longitudinal study involving larger sample size requires to be carried out to further corroborate the finding of the study. Most important aspect for success in pulpectomy cases is the indication of each case and its subsequent treatment be it multiple or single visit root canal treatment.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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