

## Original Research

### Comparative Evaluation of Postoperative Pain Between Single and Multi Visit Pulpectomy in Primary Mandibular Molar

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#### ABSTRACT:

**Aim:** We undertook the present study to assess the post-treatment pain in patients undergoing single sitting and multiple sitting pulpectomy in primary mandibular molar. **Material and method:** The present study included assessment of 40 children who underwent pulpectomy with primary mandibular molar. Complete details of the age, gender of all the patients and status of pulp of the involved teeth were also recorded in details. All the teeth were divided broadly into two study groups. First group included single sitting visit pulpectomy while the other group included multiple sitting pulpectomy cases. Postoperative pain was determined by using Visual Analogue Scale scores after 24 hrs. **Result and Conclusion:** There is no difference in post-treatment pain in patients undergoing single sitting and multiple sitting pulpectomy. More randomized controlled clinical trials using longer observation periods are required to establish an evidence based decision regarding one appointment endodontic therapy for primary teeth.

**Keywords:** Pulpectomy, Pain, Single visit, Multi-visit

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#### INTRODUCTION

In pediatric dentistry, the pulpectomy procedure for restorable primary teeth is the preferred treatment for infected pulp tissue. Before placing the pulpectomy paste, the root canals of primary teeth are shaped and cleaned.<sup>1</sup>

The primary aim of pulpectomy in deciduous teeth is to debride the root canal and maintain the nonpathologic state until the exfoliation of the tooth. This can be achieved by the careful manipulation of the root canal with the instruments and adherence to the biologic principles essential for cleaning and promote healing. The biologic aim involves removal of necrotic pulp, bacteria and bacterial toxins with

instrumentation and irrigation and filling the sterile canal with a resorbable material.<sup>2</sup>

Conventionally, root canal treatment was performed in multiple visits. Intracanal medicaments were used between appointments to reduce or eliminate microorganism from the root canal system. Multiple visit endodontic treatment is well accepted as a safe and common therapy.<sup>3</sup>

In current times, completing endodontic procedure in single visit is gaining popularity as it has reduced flare-up rate, no risk of intra appointment leakage through temporary cement, decreased number of operative procedure and dental visits.<sup>4,5</sup>

Objective of single visit endodontic treatment is to eradicate the remaining bacteria or render them innocuous by burying them with three-dimensional obturation. Completing the treatment in single visit denies the intracanal microorganisms of nutrition resources required to survive and multiply.<sup>6,7</sup> Views regarding the risks and benefits of single- versus multi visit root canal treatment differ significantly.<sup>8</sup>

Postoperative pain is unwanted but is not an uncommon occurrence irrespective of the method adopted i.e. single visit or multiple visit. Hence the purpose of present research is to evaluate the post-operative pain after single vs multiple visit pulpectomy in primary mandibular molar.

## MATERIAL AND METHOD

The present study was conducted after obtaining ethical clearance from committee and written consent was obtained after explaining in detail the entire research protocol.

In present study child aged between four to eight showing cooperative behaviour with one primary mandibular molar indicated for pulpectomy (i.e., teeth with irreversible pulpitis and necrosis with minimal root end resorption) were invited to participate in the study. Patients having multiple teeth that required pulpectomy were not included in the study to eliminate the possibility of pain referral. All patients were in good health as determined from medical history. History was taken to ensure that patients had not taken antibiotics or analgesics before the treatment. Teeth with root end resorption more than one third, intraoral or extraoral swellings were not included in the study.

A total of 40 Patients were randomly divided into single visit (Group I = 20) and multiple visit (Group II = 20). All procedure was explained to the patients and informed consent was obtained before initiating the treatment. All patients were administered local anesthesia of 1:80,000 lignocaine with adrenaline.

All superficial caries were removed with round tungsten carbide bur, and roof of the pulp chamber was removed with sterile diamond burs in a high

speed handpiece. The exposed inflamed coronal pulp/necrosed tissue was amputated using a spoon excavator and irrigated with saline. Then, the necrosed tissue was carefully extirpated from the root canals using 15 size H file. The working length was established by radiographic technique and endodontic files were selected and adjusted to stop 1 or 2 mm short of the radiographic apex of each canal. After extirpation of pulp, canals were debrided thoroughly with precurved 15 size H file using a pullback action. The canals were carefully irrigated with 1% sodium hypochlorite (NaOCl) solution with no excessive pressure. Sterile saline was used as an alternating irrigant.

For group I all canals were prepared by Kedo-s File according to manufacture instruction. After preparation the canals were dried with sterile paper points and obturated at the same appointment with Metapex (Meta Biomed/Korea).

For Group II all canals were prepared by Kedo-s File according to manufacture instruction. After preparation the canals were dried with sterile paper points. Formocresol was used as intracanal medicament for teeth in Group II. After 2–3 days the canals were irrigated with saline and dried with sterile paper points and obturation was performed with the same technique described for the single visit group. The glass ionomer cement was given as the post obturation restoration. The pulpectomy treated teeth were restored with SS crowns either on the same day or in the next appointment.

Each patient was given instruction to assess the post operative pain/ discomfort. This was carried out using a questionnaire which assessed the numeric evaluation of pain/discomfort. Postoperative pain was determined by using Visual Analogue Scale scores after 24 hrs. The VAS included a 10 cm straight horizontal line numbered at each centimetre with following criteria; 0-1- no pain; 2-3- mild pain; 4-6- moderate pain; 7-10-severe pain. The data were entered over a spreadsheet, and statistical analysis was performed using SPSS software version 17 (IBM, Chicago, United States).

## RESULT

The distribution of the study sample is shown in Table 1. Total 40 subjects were included in the present in-vivo study, in which 23 (Group I= 12, Group II= 11) were male and 17 were female (Group I= 8, Group II= 9). The incidence of post-obturation pain, in both groups was gradually reduced after 24 Hrs. But no statistically significant differences were found in the pain levels between single or multi visit protocol at 24 Hrs intervals. (Table no. 2)

Gender	Single Visit	Multi visit
Male	12	11
Female	8	9
Mean age	6.42 ± 1.25	6.54 ± 1.50

Time interval	Mean VAS score	P value
Preoperative	Group I 6.59 ± 0.45 Group II 6.44 ± 0.48	>0.05

After 24 hrs	Group I	3.60 ± 0.45	>0.05
	Group II	4.04 ± 0.42	

## DISCUSSION

The primary objective of performing pulpectomy in infected primary teeth is to eliminate microorganisms and prevent reinfection, thereby creating a favourable environment for healing of periradicular tissues and reducing the pain and discomfort to the child. 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. In addition to killing bacteria, these agents, primarily phenolic compounds, were also highly irritating to the periradicular tissues.<sup>9,10</sup> Overzealous use of these medicaments led to postoperative complications that were erroneously identified as persistent periradicular infections. Hence, this led to the inappropriate and excessive use of antibiotics to control infections. Ultimately the deleterious effects of these medicaments were identified and their routine clinical use was discontinued. This led to one of the two courses of treatment either treat the root canal in one visit or seek an intracanal medicament that does not injure the periradicular tissues.<sup>11,12</sup> Those who believe that successful root canal treatment can be completed in one visit have rationale in literature.<sup>13</sup>

Singla et al. (2008)<sup>13</sup> observed no significant difference between clinical and radiographic success rates between single visit and multi visit protocol ( $p > 0.05$ ) which is in accordance to our study.

In present study, patients in the age group of 4-8 years were selected because root formation of primary molars has been completed up to 4 years of age and root resorption of primary molars has not been started up to 8 years of age. Advantages of single visit pulpectomy in primary teeth are that its procedural steps are simple and it aims at cleaning of root canals. In contrast, multi visit pulpectomy protocol in primary teeth needs 3-4 visits to perform, each visit involves anesthesia, absolute isolation, and temporary crown sealing, which can be lost between visits and its consumes more time. Less visits and minimal radiation exposures are added benefits of single visit pulpectomy and it was favoured by few authors.<sup>14,15,16</sup>

## CONCLUSION

There is no difference in post-treatment pain in patients undergoing single sitting and multiple sitting pulpectomy. More randomized controlled clinical trials using longer observation periods are required to establish an evidence based decision regarding one appointment endodontic therapy for primary teeth.

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