



# Incidences of Flare-Ups after Single-Visit Endodontic Therapy with Metapex in Permanent Teeth with Periapical Lesion

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## KEYWORDS

Flare-ups;  
Metapex;  
Pain; RCT;  
Single  
sitting

## ABSTRACT:

### Aim

To determine the incidences of flare-up after single visit endodontic therapy with metapex in permanent teeth with periapical lesion.

### Materials and Methods

90 patients having periapical lesion were treated with Metapex through the single sitting root canal treatment. Radiographs were used to ensure correct delivery to the site. 10 patients were chosen randomly for statistical assessment.

### Results

No severe pain, severe swelling or complications were reported.

### Conclusions

Within the limitation of this study, a flare-up following a single visit endodontic treatment using Metapex in teeth with periapical lesion was investigated, and the incidence determined was minimal. Therefore, single sitting Root canal treatment can be done with the help of Metapex in teeth with asymptomatic periapical lesion.

## 1. Introduction

The main objective of RCT (Root canal treatment) is to eliminate microorganisms from the root canal. The need for medicament is more in cases where bacteria is resistant to routine RCT.<sup>[1]</sup>

Earlier, RCT (Root canal treatment) was done in multiple sittings for proper disinfection of root canal before obturation. With advancements in newer materials, instruments and techniques the face of endodontics has been changed totally. Completing RCT in single visit is gaining popularity due to less chances of flare-up, decrease number of visits and no risk of leakage through temporary cement.<sup>[2,3]</sup>

Periapical lesion occurs due to severe inflammatory response to microorganisms around the root.<sup>[4]</sup> The infection surrounding the root can lead to resorption of bone.<sup>[5]</sup> Furthermore, traumatic injuries can result in cysts and granulomas associated with periapical lesions.

Nowadays, RCT are done in single-visit by some practitioner where as some practitioners believe in multiple sitting due to long history of success. This paper aimed to determine the incidences of flare-up after single visit endodontic therapy with Metapex in permanent teeth with periapical lesion.

## 2. Materials and Methods

Patients aged above 14 years visited the Department of Conservative Dentistry and Endodontics, in dental



College were enrolled irrespective of socioeconomic status, sex and race. Informed consent explaining the rationale of the study was read and signed by the patients selected for the study.

## Study Design

After obtaining informed consent, 90 Patients were enrolled according to the inclusion and exclusion criteria. Case History was taken and pre-operative and post-operative pain and swelling was recorded. 10 patients were randomly selected for statistical analysis.

## Inclusion and exclusion criteria

Patients with age above 14 years with deep caries approaching or involving pulp and indicated for a root canal treatment, having periapical lesion, free from any systemic disease, having no history of medication for that complaint for last 24 hrs, both males and females giving proper consent, coming to the Department of Conservative Dentistry and Endodontics were allowed to participate.

The exclusion criteria include the following- pregnant and lactating women, not giving proper consent, root fractures, medically compromised patients, having preoperative intra oral and extra oral swelling and more than one third root resorption.

## Outcomes Measured

Pretreatment, inter- treatment and post treatment pain and swelling was recorded using Heft Parker Visual Analog scale and verbal rating scale respectively.

## Sample Size Calculation

The sample size was calculated as per the article by Khasawnah et al. The sample size calculation using the following formula:

$$N = \frac{(Z^2) * P * (1-P)}{d^2}$$

Where

N = sample size

Z = z statistic for the level of confidence = 2.84

P = Expected prevalence = 50%

D = Precision or allowable error = 15%

Sample size =  $\frac{2.84 * 2.84 * 0.5 * 0.5}{0.15 * 0.15} = 89.62$  rounded off to 90.

0.15\*0.15

## Study Period

The study was conducted for a period of 1 year

## Randomization

10 out of 90 patients were randomly selected for statistical analysis.

## Procedure

Preoperative pain and swelling was recorded. After giving L.A (local anesthesia), access cavity and straight line access were achieved. Patency was established using 10 K file and working length was taken. Chemomechanical preparation was done using Protaper Gold. Irrigation was done using 3% sodium hypochlorite, 17% EDTA and warm saline. Root canals were dried using paper point and obturated using gutta percha, Metapex and zinc oxide eugenol sealer in same visit using single cone technique. Pain and swelling was checked and recorded for 7 days. Randomly, 10 patients were analyzed for the present study.

## Statistical Analysis

The data for the present study was entered in the Microsoft Excel 2007 and analyzed using the SPSS statistical software 23.0 Version. The descriptive statistics included mean, standard deviation and frequency. The intragroup comparison for the different time intervals was done using paired t test Chi Square test to find the difference between the individual time intervals. The level of the significance for the present study was fixed at 5%.

## 3. Results

When intra group comparison of swelling scores were done between the different time intervals among the 10 study subjects randomly selected for statistical analysis. Before the treatment none of the subjects were having any swelling (Score 1- No Swelling). At Day 1 and subsequent time intervals up to Day 7 there was no swelling in the study subjects. The difference in the swelling scores between different time intervals was statistically non-significant when analyzed using the Chi Square test at p value of 1.000 as seen in Table 1 and Graph-1.



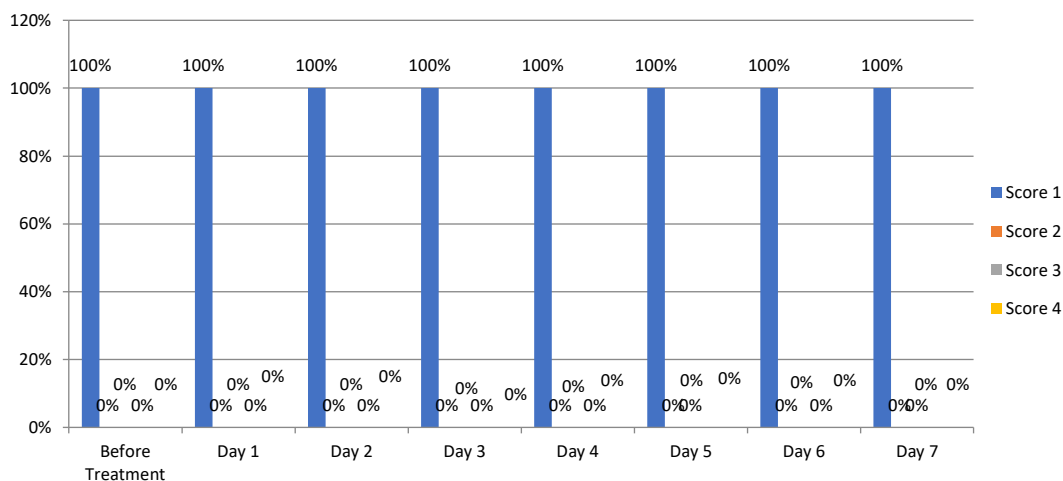
**Table 1: Intra group comparison of swelling scores between the different time intervals**

	Score 1	Score 2	Score 3	Score 4	Score 4
<b>Before Treatment</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 1</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 2</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 3</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 4</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 5</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 6</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 7</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)	00 (00%)

**Chi Square test at p value less than 1.00 is No- significant**

**Score 1-** No swelling; **Score 2-** Intraoral swelling in respect to RCT (Root canal treatment) tooth; **Score 3-** Extraoral swelling in respect to RCT Tooth; **Score 4-** Intense extraoral swelling beyond the range of RCT Tooth

**Graph 1: Intra group comparison of swelling scores between the different time intervals**



**Score 1-** No swelling; **Score 2-** Intraoral swelling in respect to RCT (Root canal treatment) tooth; **Score 3-** Extraoral swelling in respect to RCT Tooth; **Score 4-** Intense extraoral swelling beyond the range of RCT Tooth



When intra group comparison of pain scores between the different times intervals were done among the 10 study subjects randomly selected for statistical analysis. Before the treatment 40% of the subjects were having no pain, and 60% were having severe pain. At Day 1, 100% of the subjects were having mild pain, On day 2 and Day 3, 20% were having mild pain and 80% were

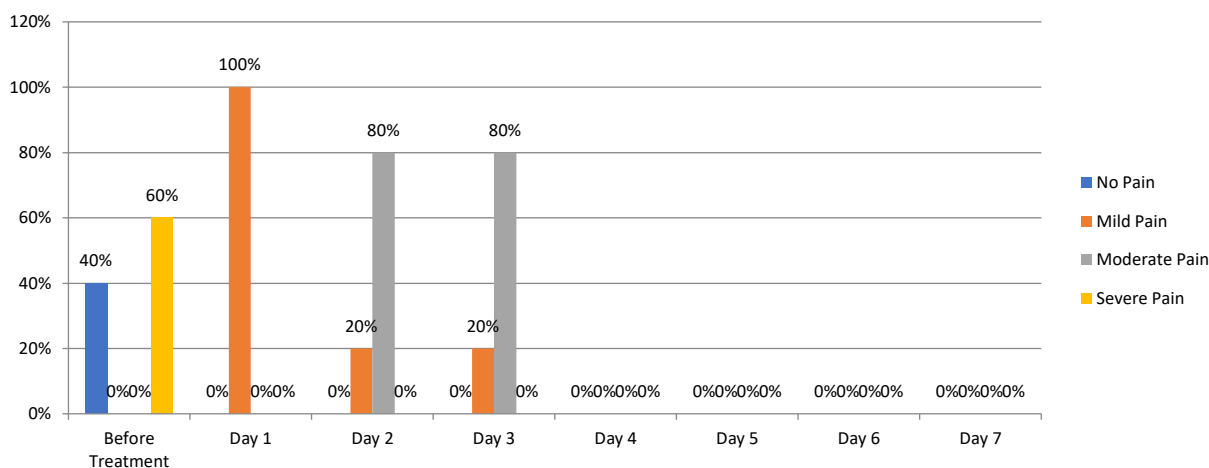
having moderate pain, and subsequent time intervals up to Day 7 there was no pain in the study subjects .The difference in the pain scores between different time intervals was statistically significant when analyzed using the Chi Square test at p value of 0.001 as seen in Table 2 and Graph 2.

**Table 2: Intra group comparison of pain scores between the different time intervals**

	No Pain	Mild Pain	Moderate Pain	Severe Pain
<b>Before Treatment</b>	04 (40%)	00 (00%)	00 (00%)	06 (60%)
<b>Day 1</b>	00 (00%)	10 (100%)	00 (00%)	00 (00%)
<b>Day 2</b>	00 (00%)	02 (20%)	08 (80%)	00 (00%)
<b>Day 3</b>	00 (00%)	02 (20%)	08 (80%)	00 (00%)
<b>Day 4</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 5</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 6</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)
<b>Day 7</b>	10 (100%)	00 (00%)	00 (00%)	00 (00%)

Chi Square test at p value less than 0.001 is significant

**Graph 2: Intra group comparison of pain scores between the different time intervals**





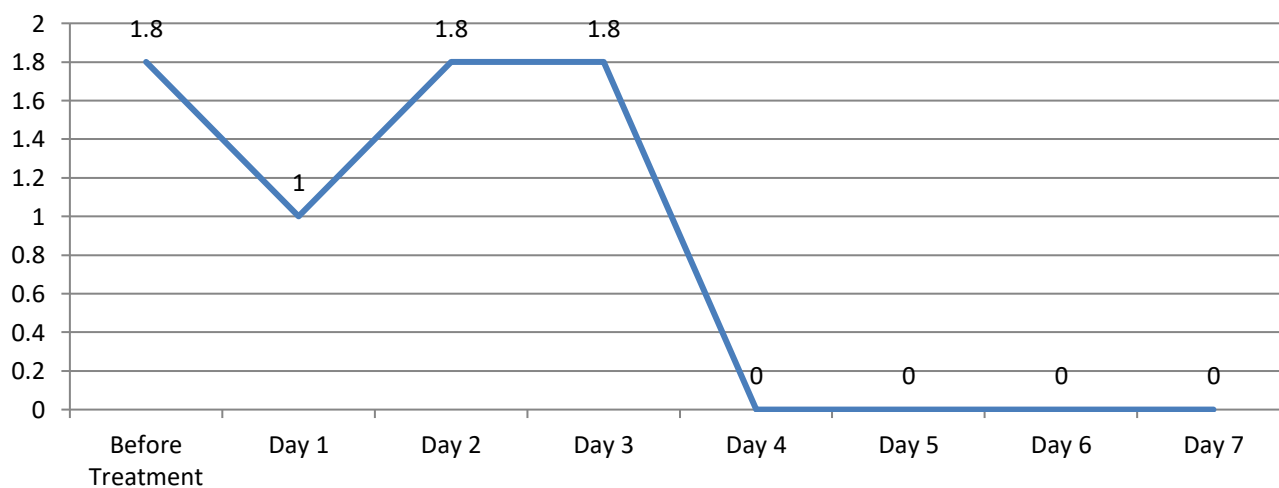
Mean pain scores at different time intervals among the 10 study subjects randomly selected for statistical analysis were analysed. There was reduction in the pain on the Day 1 of treatment and at Day 2 and 3 there was slight increase in the pain which reduced to zero at Day

4 and subsequent time intervals. The reduction in the pain from before the treatment to Day 1 was statistically significant. The subsequent reduction in the pain at Day 4, 5, 6 to zero level was statistically significant from before treatment level as seen in Table 3 and Graph 3.

**Table 3: Mean pain scores at different time intervals**

	Mean	SD	Before treatment – Day 1	Before treatment –Day 2	Before treatment – Day 3	Before treatment –Day 4,5,6,7
<b>Before Treatment</b>	1.80	1.54				
<b>Day 1</b>	1.00	0.01				
<b>Day 2</b>	1.80	0.42				
<b>Day 3</b>	1.80	0.42				
<b>Day 4</b>	0.00	0.00	p=0.023 (Sig)	P =1.000 (Non-Sig)	P =1.000 (Non-Sig)	p=0.001 (Sig)
<b>Day 5</b>	0.00	0.00				
<b>Day 6</b>	0.00	0.00				
<b>Day 7</b>	0.00	0.00				

**Graph 3: Mean pain scores at different time intervals**





## 4. Discussion

Even after best endodontic treatment bacteria can persist within the canals. The success of endodontic treatment depends on removal of these microorganisms to attain best environment for healing. This can be done with the help of both multiple and single visit treatment. Most of the dentists and patients are having fear of flare ups in between or following root canal treatment. Therefore, endodontists as well as general practitioners are always in search of methods to reduce the chances of flare ups.<sup>6</sup>

Many authorities does not recommend single visit endodontics to decrease chances of flare ups.<sup>7</sup> In the present study, the incidences of flare-up after single visit endodontic therapy with metapex in permanent teeth with periapical lesion was evaluated. In the present study no incidence of flare up was noted and single sitting root canal treatment was successfully carried out in cases of periapical lesion. It is in accordance with study done by Priyank et al.<sup>8</sup>

As till now, no study has been done in which Metapex has been used as medicament in single sitting RCT in cases of periapical lesion. So, in the present study Metapex was used.

In the present study no incidence of swelling was observed for 1 week. Also, no incidence of severe pain was encountered for 1 week. Pain was significantly reduced 1 day after the treatment. On day 2 and 3, there was slight increase in the level of pain. After day 4 no patient encountered any pain. Also, patient was asked 1 month later through telephonic conversion for any incidence of pain and swelling but no such incidence was observed.

We have not evaluated factors like the quality of obturation. Therefore, because of this further studies are required.

## 5. Conclusion

Within the limitations of this study, incidences of flare-ups are negligible after single visit endodontic therapy with metapex in permanent teeth with asymptomatic periapical lesion. Therefore, single visit endodontics can be performed in cases of asymptomatic periapical lesions using Metapex.

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