

ORIGINAL ARTICLE**EVALUATION OF PREVALENCE OF POST-TREATMENT PAIN AFTER SINGLE SITTING AND MULTIPLE SITTING ROOT CANAL THERAPY**

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ABSTRACT:

Background: For both the patients and the clinicians, the occurrence of post-treatment pain is undesirable. Pain has an adverse effect on a patient's daily routine. One of the common treatment protocols well accepted in terms of safety and efficacy is multiple sitting root canal therapy. Hence; we undertook the present study to assess the incidence of post-treatment pain in patients undergoing single sitting and multiple sitting root canal therapy. **Materials & Methods:** The present study included assessment of 200 patients who underwent treatment with root canal therapy. 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 root canal therapy cases while the other group included multiple sitting root canal cases. All the cases were performed by skilled and experienced endodontist. Patients were asked about the post-treatment pain at the starting of the second appointment. Three days after the initial appointment of the patients, the assessment of post operative pain was carried out. Categorization of pain was done as follows: No pain, mild pain, moderate pain, and severe pain. All the results were analyzed by SPSS software. **Results:** A total of 200 subjects were included in the present study. Out of 200, 106 were males while 94 were females. 73 males and 62 females exhibited post operative pain. 126 subjects out of 185 in which peri-apical lesions were absent showed presence of post-treatment pain. Non-significant results were obtained while comparing pain among patients of the two study groups. **Conclusion:** There is no difference in the incidence of post-treatment pain in patients undergoing single sitting and multiple sitting root canal therapies.

Key words: Multiple sitting, Pain, Root canal, Single sitting

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INTRODUCTION

Up to 50 percent of the patients undergoing root canal therapy experience post treatment pain.^{1, 2} For both the patients and the clinicians, the occurrence of post-treatment pain is undesirable. Pain has an adverse effect on a patient's daily routine. One of the common treatment protocols well accepted in terms of safety and efficacy is multiple sitting root canal therapy.³ In recent years, there is a growing concern about the necessity of multiple appointments in endodontic treatment because no significant differences in antimicrobial efficacies have been reported between the single- and multiple-visit treatments.⁴ Furthermore, the recent invention of rotary nickel-titanium systems and improvements in the understanding of irrigation dynamics have facilitated the mechanical instrumentation and disinfection of the root canal, which makes the single-appointment treatment more convenient and an acceptable treatment regime than before.⁵ Literature quotes few studies that state that post-treatment pain is affected by the number of treatment procedures the patient undergoes.⁶ Hence; we undertook

the present study to assess the incidence of post-treatment pain in patients undergoing single sitting and multiple sitting root canal therapy.

MATERIALS & METHODS

The present study was conducted in the department of conservative dentistry of the dental institution and included assessment of 200 patients who underwent treatment with root canal therapy from June 2015 to July 2016. Ethical approval was taken from the institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. All the patients aged between 18 years to 65 years of age. Exclusion criteria for the present study included:

- Patients less than 18 years of age,
- Patients with history of any systemic illness,
- Patients with any known drug allergy,
- Patients who had previously taken antibiotics or analgesics

Complete details of the age, gender of all the patients and status of pulp of the involved teeth were also recorded in

details. For assessment of the vitality status of the pulp, electric pulp testing device was used. Determination of the working length was done radiographically. The root canals were cleaned and shaped using the step-back technique, hand files, and Gates-Glidden drills. Each file was followed by irrigation of the canal with 2 mL sodium hypochlorite (5%) in a syringe with a 27-gauge needle. All the teeth were divided broadly into two study groups. First group included single sitting root canal therapy cases while the other group included multiple sitting root canal cases. All the cases were performed by skilled and experienced endodontist. Patients were asked about the post-treatment pain at the starting of the second appointment. Three days after the initial appointment of the patients, the assessment of post operative pain was carried out. Categorization of pain was done as follows: No pain, mild pain, moderate pain, and severe pain.⁷ All

the results were analyzed by SPSS software. Chi-square test and student t test were used for the assessment of level of significance. P-value of less than 0.05 was taken was significant.

RESULTS

A total of 200 subjects were included in the present study. Out of 200, 106 were males while 94 were females (**Table 1**). Majority of the subjects belonged to the age group of 18 years to 25 years. 73 males and 62 females exhibited post operative pain. 126 subjects out of 185 in which peri-apical lesions were absent showed presence of post-treatment pain (**Table 2, Graph 1**). Non-significant results were obtained while comparing pain among patients of the two study groups (**p-value < 0.05**) (**Table 3**).

Table 1: Distribution of different demographic parameters in complete healing group

Parameter		Number	Pre-treatment pain (n)	Post-treatment pain (n)
Gender	Male	106	48	73
	Female	94	45	62
Age group (years)	18- 25	79	35	48
	26- 35	56	28	38
	36- 45	38	17	27
	46- 55	18	10	15
	55 and above	9	3	7

Table 2: Distribution of different radiographic parameters in complete healing group

Parameter		Number	Pre-treatment pain (n)	Post-treatment pain (n)
Pre-treatment peri-apical lesions	Present	15	8	6
	Absent	185	85	129

Graph 1: Distribution of different clinical and radiographic parameters in all the patients

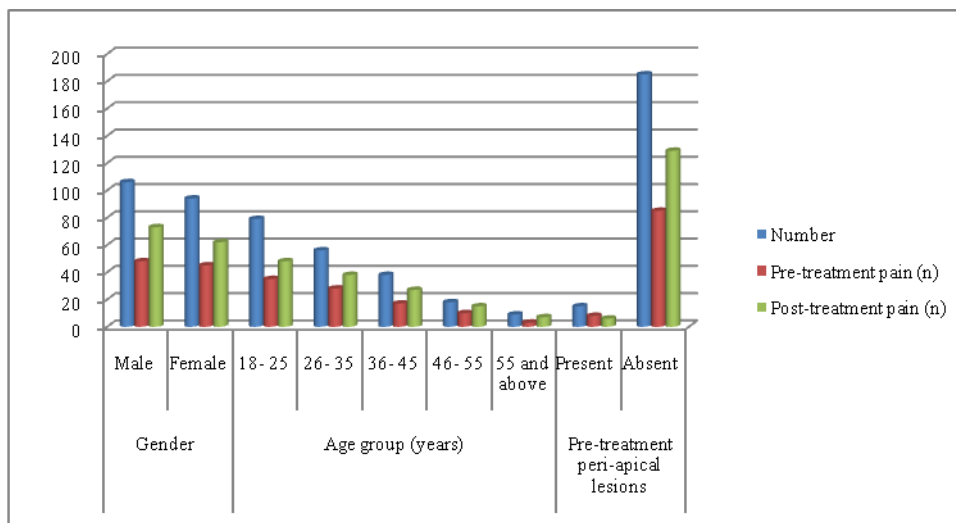


Table 3: Distribution of pain level in patients undergoing single sitting and multiple sitting root canal therapy

Group	Pain				p-value
	No pain	Mild	Moderate	Severe	
Single sitting group	30	43	16	7	0.25
Multiple sitting group	35	46	15	8	

DISCUSSION

One of the reasons for the occurrence of apprehension among patients in relation to dental treatment is Pain.^{8,9} Even with the administration of adequate anaesthesia, occurrence of post-treatment pain is one of the primary problems encountered in patients undergoing root canal therapy. Elimination of the pain holds the key to the success of endodontic therapy.^{10,11} Hence; we undertook the present study to assess the incidence of post-treatment pain in patients undergoing single sitting and multiple sitting root canal therapy.

In the present study, we observed that no significant difference occurred in the incidence of post-treatment in pain in between patients of the two study groups. Ince B et al assessed the incidence of postoperative pain after single- and multi-visit endodontic treatment of teeth with vital and non-vital pulp. In total, 306 patients with teeth requiring endodontic treatment were identified and were included in this study. Two experienced clinicians treated the patients, who were randomly assigned to two groups. While the teeth of patients in group 1 were obturated, group 2 were temporarily sealed and obturated after one week. Three days after the root canal instrumentation of each tooth, the patients were asked whether they experienced any postoperative pain and to rate the level of discomfort as no, mild, moderate, or severe pain. No significant difference in postoperative pain was found between vital and non-vital teeth. Mild, moderate, and severe pain occurred in 31.4, 13.7, and 4.6% of vital teeth, respectively. Postoperative pain occurred in 107 and 106 teeth in the single- and multi-visit treatment groups, respectively. There was no significant difference in postoperative pain between the two groups. The prevalence of postoperative pain did not differ between vital and non-vital teeth. The majority of patients in either groups reported no or only mild pain.¹² Wang C et al compared the incidence and intensity of post-obturation pain after one- or two-visit root canal treatment (RCT) on anterior teeth with vital pulps and a single root and canal in a randomized controlled trial. One hundred patients requiring RCT on permanent anterior teeth with vital pulps preoperatively were included. The patients were assigned randomly into two groups of 50 patients each. After local anaesthesia, isolation, access and pulp extirpation, the canals of all teeth were prepared using engine-driven rotary ProTaper nickel-titanium instruments in a crown-down technique and irrigated with 2.5% NaOCl. The teeth in group 1 were filled with AH Plus sealer and gutta-percha using a lateral compaction technique at the first visit, whilst those in group 2 were medicated with a calcium hydroxide paste, a sterile dry cotton pellet and Caviton and scheduled for a second visit 7 days later. A modified verbal descriptor scale was used to measure preoperative pain and post-obturation pain at 6, 24, 48 h and 1 week after operation. Forty-three patients were undergoing one-visit treatment (group 1) and 46 undergoing two-visit treatment (group 2). Most patients in both groups reported no pain or only slight pain within each post-obturation interval, only one in group 1 and one in group

2 had flare-ups and slight swelling. There was no statistically significant difference in the incidence and intensity of post-obturation pain experienced by two groups. The incidence and intensity of post-obturation pain experience following one- or two-visit RCT on teeth with vital pulps and a single canal were not significantly different.¹³

Jabeen S et al evaluated the incidence of post obturation pain in single visit and multi visit root canal treatment and to compare the incidence of pain between the two treatment groups. A total of 120 cases of endodontically involved asymptomatic non vital single rooted teeth were selected for this study. The patients were assigned and divided in to two treatment groups, sixty patients each. In single visit group, all teeth were prepared and filled using the standardized preparation and lateral condensation filling technique. In the multi visit treatment group, at the first appointment, the teeth were prepared, and dressed with calcium hydroxide paste for 7 days. At the second appointment, the teeth were prepared and obturated by using lateral condensation technique. The frequency of post obturation pain was recorded as no pain, slight, moderate and severe pain and evaluated at the day 1 and at the day 7 after obturation. The study showed that the post obturation pain in the single visit treatment group was more than multi visit treatment group, which is significant. Out of the 120 patients, 86 patients had no pain, 19 had slight pain and 15 patients had moderate pain at the day 1 after obturation. At the day 7 after obturation, 108 patients had no pain, 9 had slight pain and 3 patients had moderate pain. No patient noticed severe pain during the follow up period. Older patient had significantly more post obturation pain than the younger patient. There was higher incidence of post obturation pain following the single visit root canal treatment. In multi visit root canal treatment with intracanal medicaments seems to reduce the post obturation pain.¹⁴ Manfredi M et al determined whether completion of root canal treatment (RoCT) in a single visit or over two or more visits, with or without medication, makes any difference in term of effectiveness or complications. They searched the following electronic databases: Cochrane Oral Health's Trials Register (to 14 June 2016), Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library, 2016, Issue 5), MEDLINE Ovid (1946 to 14 June 2016), and Embase Ovid (1980 to 14 June 2016). They searched ClinicalTrials.gov and the World Health Organization International Clinical Trials Registry Platform for ongoing trials to 14 June 2016. They included 25 RCTs in the review, with a total of 3780 participants, of whom we analysed 3751. We judged three studies to be at low risk of bias, 14 at high risk, and eight as unclear. Only one study reported data on tooth extraction due to endodontic problems. This study found no difference between treatment in one visit or treatment over multiple visits (1/117 single-visit participants lost a tooth versus 2/103 multiple-visit participants; odds ratio (OR) 0.44, 95% confidence interval (CI) 0.04 to 4.78; very low-quality evidence). The studies suggested people

undergoing RoCT in a single visit may be more likely to experience pain in the first week than those whose RoCT was over multiple visits (RR 1.50, 95% CI 0.99 to 2.28; 1383 participants, 8 studies, I² = 54%), though the quality of the evidence for this finding is low. Moderate-quality evidence showed people undergoing RoCT in a single visit were more likely to use painkillers than those receiving treatment over multiple visits (RR 2.35, 95% CI 1.60 to 3.45; 648 participants, 4 studies, I² = 0%). There is no evidence to suggest that one treatment regimen (single-visit or multiple-visit root canal treatment) is better than the other.¹⁵

CONCLUSION

From the above results, the authors concluded that post-treatment pain after the successful completion of root canal therapy is mainly associated with pre-treatment pain. However, there is no difference in the incidence of post-treatment pain in patients undergoing single sitting and multiple sitting root canal therapies.

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