

Postobturation Pain in Asymptomatic Non Vital Single Rooted Maxillary Teeth Following Single and Two Visit Root Canal Treatment

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Abstract

Objectives : The purpose of the present study was to assess the incidence and severity of pain after single and two visit Root Canal Treatment (RCT) / endodontic treatment in asymptomatic non vital single rooted maxillary teeth. **Methods :** Eighty one cases of endodontically involved asymptomatic, non vital, single rooted maxillary teeth without evidence of periapical radiolucency in radiograph were selected for this study. The patient were divided into two treatment group. In single visit group, all teeth were prepared and filled using the standardized preparation and lateral condensation filling technique. In the two 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/ mild, moderate and severe pain and evaluated at the day 1 and at the day 7 after obturation. The data were analyzed statistically by using SPSS version 16. p-value <0.05 was taken as significant. **Results :** No significant difference in post obturation pain was found in between single and two visit RCT in maxillary teeth. At the day 1 and 7 after obturation, single visit (n= 41) group and two visit (n=40) group similarly experienced moderate pain (2.5% and 1.1% respectively in both group). At day 1 and 7 after obturation, mild pain is more in single visit than two visit group. However, there was no statistically significant difference in pain between the two groups. No one experienced severe pain in two groups. **Conclusion:** The incidence and severity of post obturation pain did not differ between single and two visit RCT in asymptomatic non vital single rooted maxillary teeth.

Key words: Post obturation pain; Root canal treatment; Single visit; Two visit; Maxillary teeth.

INTRODUCTION

A major goal of Root Canal Treatment (RCT) / endodontic treatment is the preservation of natural teeth. But RCT or endodontic treatment can be followed by short and long term complications¹. Some of the problems of RCT are post obturation pain, interappointment pain and swelling². The development of postobturation pain after RCT is a poor indicator of pathosis and unreliable predictor of long term success³. Completion of RCT can be done by single visit or multivisit procedures. The concept of doing complete endodontic treatment in one visit is not new. It was there from at least 100 years⁴. The completion of endodontic treatment in a single appointment has been currently used. Although the argument for single visit treatment depends on the convenience, patient acceptance, and reduced post operative pain⁵. Multiple visit RCT has long been taught to undergraduate dental students and is regarded as a safer procedure than single visit RCT^{3,6}. Existing literatures on single as compared to multiple visit endodontic treatment gives conflicting opinions and recommendations⁷.

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There are several studies on single and multivisit root canal treatment and its outcome. A few studies on asymptomatic non vital teeth^{8,9,10}. But there is a very few literatures on post obturation pain in asymptomatic, non vital, single rooted maxillary teeth following RCT.

Therefore, the aim of this clinical study was to assess the incidence and severity of pain after one and two visit RCT/ endodontic treatment in asymptomatic, non vital, single rooted maxillary teeth.

MATERIALS AND METHODS

A total of 81 cases of endodontically involved asymptomatic, non vital, single rooted maxillary teeth without any evidence of periapical radiolucency in periapical radiograph, were selected for this study. The study was conducted in Department of Conservative Dentistry and Endodontics, Dhaka Dental College and Hospital, Dhaka, Bangladesh. The sample size was divided into two treatment groups.

Group I : Single visit treatment group (n=41)

Group II : Two visit treatment group (n=40)

Diagnosis of non vital asymptomatic tooth was confirmed by pulp sensitivity test applying heat and cold method and examination of pre- operative periapical radiograph was done to exclude periapical lesion cases. The canal of all teeth were prepared and filled using the standardized preparation and lateral condensation filling technique. In the single visit treatment group, at the first appointment, the teeth were isolated, biomechanically prepared, dried and obturated with Gutta- Percha points and zinc oxide eugenol sealer using lateral condensation technique. Where as in the two visit treatment group, at the first appointment, the teeth were isolated, biomechanically prepared, dried, dressed with calcium hydroxide paste and sealed. At the second appointment, seven days after first one, the teeth were isolated, irrigated, dried and obturated with Gutta- Percha points and zinc oxide eugenol sealer using lateral condensation technique.

The patient was asked to report, record or interviewed any pain experience at the day 1 and 7 after obturation. The presence or absence of pain or the appropriate degree of pain was recorded and graded as :-

1. No Pain (Grade 0) :- The treated tooth feels normal.
2. Slight / Mild Pain (Grade I) :- Any discomfort, no matter how many brief in duration that do not require medication.
3. Moderate Pain (Grade II) :- Pain tolerable or is tolerable by analgesics.
4. Severe Pain (Grade III) :- Pain not responding to analgesics, disturb normal activity/ sleep/ impairment of masticatory function.

The data was analyzed by a computer based software program- Statistical Package for Social Science (SPSS version- 16). p- value <0.05 considered as significant.

RESULTS

The study included 81 patients. They were divided into two treatment groups. Single visit treatment group was assigned as Group I (n=41) and two visits treatment group was assigned as Group II (n=40). We intended to compare the outcome of post obturation pain in asymptomatic non vital single rooted maxillary teeth at day one and at day seven between single visit treatment group and two visit treatment group.

Table 1 : Comparison of age and gender between single and two visit groups (n=81).

Age and gender of the patients	Group-I (n=41)	Group-II (n=40)	Total (n=81)	P value	
Gender	Male	26(32.1%)	19(23.5%)	45(55.6%)	0.150 ^{NS}
	Female	15(18.5%)	21(25.9%)	36(44.4%)	
Age group	>25 years	14(17.3%)	9(11.1%)	23(28.4%)	0.245 ^{NS}
	<25 years	27(33.3%)	31(38.3%)	58 (71.6%)	
Age in years	Mean±SD	23.68±6.64	21.83±6.04	22.77±6.38	0.192 ^{NS}

Group I: Single visit treatment group

Group II: Two visits treatment group

^{NS} = Not significant

p value derived from Pearson Chi-Square test/ Student t-test

There were 45 (55.6%) male and 36 (44.4%) female. Among the Group I patients, 26(32.1%) were male and 15(18.5%) were female and among the Group II patients, 19(23.5%) were male and 21(25.9%) were female. The difference in gender between two groups were not significant (p=0.150) (Table 1).

The age of the total patients ranged from 15-40 years (mean age 22.77±6.38 years). The mean±SD age of Group I was 23.68±6.64 years and of Group- II was 21.83±6.04 years. There was no significant difference in age between two groups (p=0.192) (Table 1). Fourteen (17.3%) patients in Group I and 9(11.1%) patients in Group II belonged to age > 25 years and 27(33.3%) patients in Group I and 31(38.3%) Patients in Group II belonged to age <25 years. However, the difference in age group between two groups was not significant (p=0.245) (Table 1).

Table 2 : Comparison of baseline characteristics between single and two visit groups (n=81).

Baseline Characteristics	Group I (n=41)	Group II (n=40)	Total (n=81)	P value (n=81)	
Occupation	Business	2(2.5%)	3(3.7%)	5(6.2%)	0.367 ^{NS}
	House wife	6(7.4%)	3(3.7%)	9(11.1%)	
	Service	5(6.2%)	10(12.3%)	15(18.5%)	
	Student	28(34.6%)	24(29.6%)	52(64.2%)	
Tooth type	2nd premolar	5(6.2%)	13(16.0%)	18(22.2%)	0.142 ^{NS}
	Canine	7(8.6%)	5(6.2%)	12(14.8%)	
	Central incisor	21(25.9%)	18(22.2%)	39(48.1%)	
	Lateral incisor	8(9.9%)	4(4.9%)	12(14.8%)	
Side	Left	20(24.7%)	19(23.5%)	39(48.1%)	0.908 ^{NS}
	Right	21(25.9%)	21(25.9%)	42(51.9%)	
History	Filling	16(19.8%)	20(24.7%)	36(44.4%)	0.320 ^{NS}
	Trauma	25(30.9%)	20(24.7%)	45(55.6%)	
Sign	Carries	16(19.8%)	20(24.7%)	36(44.4%)	0.320 ^{NS}
	Discoloration	25(30.9%)	20(24.7%)	45(55.6%)	
Periodontal condition	Average	41(50.6%)	35(43.2%)	76(93.8%)	0.065 ^{NS}
	Good	0(0.0%)	1(1.2%)	1(1.2%)	
	Poor	0(0.0%)	4(4.9%)	4(4.9%)	

Group I : Single visit treatment group. Group II : Two visits treatment group.

^{NS}= Not significant. p value derived from Pearson Chi-Square test.

By occupation, most of the patients were student (n=52, 64.2%) followed by service holder (n=15, 18.5%) and house wife (n=9, 11.1%). The occupation of the participant of the two groups was similar with no significant difference (p=0.367) as shown in table 2.

Mostly affected teeth were central incisor (25.9% in Group I and 22.2% in Group II). Other affected teeth were 2nd premolar, canine and lateral incisor. No significant difference was observed in tooth type between groups (p=0.142) (Table 2).

Thirty-nine (48.1%) teeth belonged to left side of the maxillary arch and rest 42(51.9%) belonged to right side of the maxilla. Side of the teeth studied did not differ significantly (p=0.908) between Group I (left vs right, 24.7% vs25.9%) and Group II (left vs right, 23.5% vs 25.9%) (Table 2).

History revealed that 36 (44.4%) patients had previous treatment with filling and 45 (55.6%) had trauma. Filling as clinical history was slightly more in Group II than Group I (24.7% vs 19.8%), and trauma was slightly more in Group I than Group II (30.9% vs 24.7%) but the difference was not significant (p=0.320) (Table 2).

Clinically, 36(44.4%) patients had dental carries and 45(55.6%) had discoloration of tooth. The sign of dental carries was more in Group II than Group I (24.7% vs19.8%) and sign of discoloration was more in Group I than Group II (30.9% vs 24.7%) but the difference was not statistically significant (p=0.320) (Table 2).

The peri odontal condition was average in 76(93.8%) patients, good in 1(1.2%) patients and poor in 4(4.9%). All 41(50.6%) patients of Group I and 35(43.2%) of Group II had average periodontal condition. Among the patients of Group II, 4(4.9%) had poor and 1(1.2%) had good periodontal condition, however the difference between groups was not significant (p=0.065) (Table 2).

Table 3 : Comparison of degree/severity of pain between single and two visit groups (n=81).

The day after Postobturation	Degree/severity of pain	Group I (n=41)	Group II (n=40)	Total (n=81)	P value
At the day 1 after Postobturation					
	Moderate pain	2(2.5%)	2(2.5%)	4(4.9%)	0.347 ^{NS}
	Mild pain	6(7.4%)	2(2.5%)	8(9.9%)	
	No pain	33(40.7%)	36(44.4%)	69(85.2%)	
At the day 7 after Postobturation					
	Moderate pain	1(1.1%)	1(1.1%)	2(2.5%)	0.368 ^{NS}
	Mild pain	2(2.5%)	0(0.0%)	2(2.5%)	
	No pain	38(46.9%)	39(48.1%)	77(95.1%)	

Group I : Single visit treatment group.

Group II : Two visits treatment group.

NS= Not significant.

p value derived from Pearson Chi-Square test.

Out of 81 patients, mild and moderate pain was experienced by 8(9.9%) and 4(4.9%) patients respectively and 69 (85.2%) patients experienced no pain at the day 1 after postobturation. Whereas, mild and moderate pain was experienced by 2(2.5%) patients each and 77 (95.1%) patients experienced no pain at the day 7 after postobturation. None experienced severe pain in both follow-up days (Table 3).

At the day 1 after postobturation both the groups similarly experienced moderate (2.5% in both) pain. Group I experienced mild pain more than Group II (7.4% vs 2.5%). Group II had more patients than Group I who experienced no pain (44.4% vs 40.7%). However, there was no statistically significant difference between Group I and II in experiencing severity of pain (p=0.347) (Table 3).

At the day 7 after postobturation both the groups similarly experienced moderate (1.1% in both) pain. Group I experienced mild pain more than Group II (2.5% vs 0.0%). Group II had more patients than Group I who experienced no pain (48.1% vs 46.9%). However, there was statistically no significant difference between Group I and II in experiencing severity of pain (p=0.368) (Table 3).

DISCUSSION

The result of this clinical study did not show a significant difference in post obturation pain in asymptomatic, non vital, single rooted maxillary teeth, following single and two visit RCT.

Outcome of post obturation pain and flare up following single visit and multivisit RCT is a long term debate. Several researchers studied on this regards with conflicting results. Oginni and Udoye, Soltanoff and Montclair, Ether, Ng Y-I et al and Gesi et al concluded more pain in single visit than multivisit RCT^{3,11-14}. On the contrary, Albashaireh and Al negrish and Roane et al showed more pain in multivisit than single visit RCT^{6,7}.

Al negrish and Habahbeh and Walton and Fouad observed no significant differences between one and two visits RCT and our study also support them^{9,15}.

Though, we studied only maxillary arch teeth, Dall et al and Alcam and Tinaz found more pain in mandibular arch than maxillary arch. Where are Imura and Zuolo, Ince et al and Eleazer and Eleazer found no significant differences in pain between maxillary and mandibular teeth¹⁶⁻²⁰.

We studied maxillary single rooted teeth i.e 2nd premolar, canine, central incisor and lateral incisor teeth with no significant difference in incidence and severity of pain in single and two visit RCT. There is also no difference in observation of pain at day 1 and day 7 after postobturation. Mulhern et al treated maxillary single rooted, symptom less, necrotic teeth in one and two visit RCT, reported no significant difference in post obturation pain in between two group⁸. Fava studied sixty maxillary central incisor with asymptomatic necrotic pulp in one and two visits²¹. There is no difference was observed in the incidence of post operative pain between the two group.

Clem found that maxillary anterior teeth and premolars were involved with significantly less increased post treatment pain than other teeth²². Our study is consistent with them.

There are several studies on post obturation pain. These studies have variations in study design, severity of pain assessment, pre operative condition of teeth, post operative follow up, technique of RCT, analysis of data etc, resulting variation in studies of post obturation pain and giving different opinions and recommendations.

CONCLUSION

Though multivisit RCT may considered as safer, under the condition of our study, it is found that there is no significant difference of post obturation pain in single visit and two visit RCT in single rooted maxillary asymptomatic non vital teeth.

DISCLOSURE

All the authors declared no competing interest.

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