A Study of Post Obturation Pain Following Single Visit Root Canal Treatment

Salma Jabeen[1*]
Khurshiduzzaman[2]

[1]Medical Officer
Department of Dental and Fascio-Maxillary Surgery
National Institute of Cancer Research and Hospital
Mohakhali, Dhaka, Bangladesh.

[2]Professor and Head, Department of Dentistry
Dinajpur Medical College, Dinajpur, Bangladesh.

Abstract

Introduction: Root canal treatment (RCT) is a common procedure in dentistry. In recent year, single visit RCT has gained increased acceptance as a treatment procedure of RCT. One of the problem of RCT is post obturation pain. **Objectives:** This study was conducted to determine the incidence of post obturation pain related to single visit RCT in asymptomatic non-vital single rooted teeth. **Methods:** A total 60 cases of endodontically involved asymptomatic non-vital single rooted teeth without any evidence of periapical radiolucency in radiograph, were selected for this study. The canals of all teeth were prepared and filled using the standarized preparation and lateral condensation filling technique. The frequency of post obturation pain was recorded as no pain, slight, moderate and severe pain and evaluated at the day l and at the day 7 after obturation. **Result:** Out of the 60 patients involved in the study, 37 patients had no pain, 12 patients had slight pain and 11 patients had moderate pain at the day 1 after post obturation. At the day 7 after post obturation, 50 patients had no pain, 8 patients had slight pain and 2 patients had moderate pain. No one showed severe pain in both follow up days. **Conclusion:** Statistically significant differences were found in the incidence and degree of pain between two follow up days. Incidence of pain was more in 1st post obturation day and decreased thereafter.

Key words: RCT; Single visit; Post obturation pain.

INTRODUCTION

Root canal treatment (RCT) or endodontic treatment is a common procedure in dentistry. Successful RCT is characterized by an absence of symptoms and clinical signs in teeth without radiographic evidence of periodontal involvement. The success of RCT depends on a series of variables related to the preoperative condition of the tooth, as well as the endodontic procedure[1]. The procedure can be done in single visit or multivisit[2]. Endodontic treatment can be followed by numerous short and long term complications[3]. Some of the problem of RCT is post obturation pain, inter appointment pain and swelling[4]. Post obturation pain is the pain of any degree after endodontic treatment[5]. Development of pain after completion of RCT may undermine patient's confidence in the clinician and acceptance of the procedure[6].

The etiological factors for post obturation pain or flare ups are complex and involved various aspects such as–type of treatment (initial treatment or re-treatment), number of appointment (single or multiple visit), mechanical or chemical injury during clinical procedure, microbial factors related to the contents of infected root canal etc[7]. Among these, one of the factors "numbers of appointments" (single or multi visit) may predispose the development of post obturation pain and flare-up.

Multi visit root canal treatment has long been taught to undergraduate dental students and is practiced as a safer procedure[8,9]. But patients request and expectation of treatment have made single visit RCT popular among dental surgeons, as it is less time consuming and more economical[10], and as a consequence, more appropriated to the needs of iterant and busy patients[11]. Single visit RCT has been recommended in case of pulpal inflammation, traumatic pulpal exposure or necrotic pulp with a sinus tract[8].

*Correspondence to:
Dr. Salma Jabeen
Medical Officer
Department of Dental and Fascio-Maxillary Surgery
National Institute of Cancer Research and Hospital
Mohakhali, Dhaka, Bangladesh.
E-mail: drsj17@gmail.com

However, current studies demonstrated that the incidence of post obturation pain was not increased in patients who were treated in single visit versus those treated in multiple visits endodontics[7,12,13,14]. Studies on post obturation pain in asymptomatic non-vital tooth were limited. Analysis of post obturation pain may lead to modification of treatment and technique. Therefore, this study was aimed to determine the post obturation pain related to the single visit RCT in asymptomatic non-vital single rooted teeth.

MATERIALS AND METHODS

A total of 60 cases of endodontically involved asymptomatic non-vital single rooted teeth without any evidence of periapical radiolucency in periapical radiograph were selected for this study who attended at the Department of Conservative Dentistry and Endodontics, Dhaka Dental College & Hospital, Bangladesh. It was a prospective study and was carried out during the period from January 2009 to December 2009. Diagnosis of non vital asymptomatic, necrotic tooth was confirmed by pulp sensitivity test applying heat and cold method and examination of preoperative periapical radiograph was done for excluding periapical lesion cases.

The canals of all teeth were prepared and filled using the standardized preparation and lateral condensation filling technique. At the first appointment, the teeth was isolated, biomechanically prepared, 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 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 or sleep or impairment of masticatory function.

The data was analyzed by a computer based software program, SPSS version-12. Pvalue <0.05 Considered as significant.

RESULTS

Total number of cases was 60. Out of these, male was 32(53.3%) and female was 28(46.7%). The age of the patients was ranges from 15-40 years (mean age 22.9±6.68 years). In clinical evaluation, 31(51.7%) patients had history of trauma, 31(51.7%) had discolouration of tooth and 29(48.3%) had carries of the tooth. The periodontal condition was avearage in 59(98.3%) patients. By occupation, most of the patients were students (n=34,56.7%) followed by house wife (n=14,23.3%). 39(65%) teeth were of maxillary arch and 21(35%) were mandibular arch.

Out of 60 patients, 37(61.6%) experienced no pain, 12(20%) slight pain and 11(18.4%) moderate pain i.e 23(38.4%) experienced pain at the day 1 after post obturation. Where as 50(83.3%) patients had no pain, 8(13.3%) had slight pain and 2(3.3%) showed moderate pain at the day 7 after post obturation.

No one experienced severe pain in both follow-up days (Table-1). Female were found to record more pain than males and older patients (≥25years) percieved more pain than younger patients at both day l and 7 after post obturation. When considering arch group and type of teeth, pain is experienced more in mandibular group and pre- molar teeth than maxillary and anterior teeth at both 1st and 7th post obturation days (Table 2 & 3).

Table 1 : Degree/ severity of pain following 1st and 7th post obturation day.

Follow up	Pain		Total	
	No pain	Slight pain	Moderate pain	Severe pain
1st post obturation day	37(61.6%)	12(20%)	11 (18.3%)	00 (00%)	60(100%)
7th post obturation day	50(83.4%)	08(13.3%)	02(3.3%)	00(00%)	60(100%)

Chi-square value- 8.96, df-2, P value <0.05(0.010), Significant.

Table 2 : Pain following 1st post obturation day in different variables.

Variables	No pain experienced. No. (%)	Pain experienced. No. (%)	Total No.(%)	P value
Gender-				
Male	21(35%)	11(18.3%)	32(53.3%)	0.5^{NS}
Female	16(26.7%)	12(20.0%)	28(46.7%)	
Age-				
<25 years	24(40%)	10(16.6%)	34(56.6%)	0.104^{NS}
≥25 years	13(21.7%)	13(21.7%)	26(43.4%)	
Arch-				
Mandible	07(11.7%)	14(23.3%)	21(35%)	0.001^{S}
Maxilla	30(49.9%)	09(15.0%)	39(65.0%)	
Type of teeth-				
Anterior	29(48.33%)	10(16.6%)	39(65.0%)	0.005^{S}
Pre-molar	08(13.33%)	13(21.6%)	21(35.0%)	

* NS= Not significant, S-Significant

Table 3 : Pain following 7th post obturation day in different variables.

Variables	No pain experienced No. (%)	Pain experienced No. (%)	Total No. (%)	P value
Gender-				
Male	28(46.7%)	04(6.7%)	32(53.3%)	0.35^{NS}
Female	22(36.7%)	06(10.0%)	28(46.7%)	
Age-				
<25years	31(51.7%)	03(5.0%)	34(56.7%)	0.62^{NS}
≥25years	19(31.6%)	07(11.7%)	26(43.3%)	
Arch-				
Mandible	15(25.0%)	06(10.0%)	21(35.0%)	0.04^{S}
Maxilla	35(58.3%)	04(6.7%)	39(65.0%)	
Type of teeth-				
Anterior	35(58.3%)	04(6.7%)	39(65.0%)	0.06^{NS}
Pre-molar	15(25.0%	06(10.0%)	21(35.0%)	

* NS= Not significant, S-Significant

DISCUSSION

The present study was performed to evaluate the incidence of post obturation pain in single visit root canal therapy in asymptomatic non-vital single rooted teeth. This study showed no pain in 83.4% patients at 7th post obturation days, which is similiar to Ogini & Udoye[4] and Kane et a1[15] where it was 83.7% and 81.25% respectively. But in 1st post obturation day, Ogini & Udoye[4] found no pain in 45.8%, Albashaireh & Alnegrish[16] found 72.54%, El-Mubarak et al[2] found 90.6% of patients. Where as in this study, it was 61.6%. It may be due to that they observed pain in both vital and non-vital as well as all types of teeth where as this study was caried out in only non vital single rooted teeth.

This study showed, post obturation pain in 16.6% patients where as it was 18.3% and 3.7% reported by Oginni & Udoye[4] and Al-Negrish & Hababheh[17] respectively.

The incidence of post obturation pain was more during the 1st day after obturation. However, at 7th day, post obturation pain decreased significantly which was found in agreement with the findings of other studies[18,19,20,21].

In 1st post obturation day as well as 7th post obturation day females reported more pain than males. These results support findings of previous workers[16,17,22,23,24,25,26]. Female patients experienced more pain than male patients, a possible explanation is that biological differences between genders may explain increased pain prevalence in females[17].

This study showed more pain was perceived by older patients than younger, which is supported by findings of Torabinejad et al[27], O'Keefe[28] and Cheng et al[29]. Regarding the arch of teeth, mandibular arch showed more pain than maxillary arch which is similiar to El-Mubarak et al[2], Segura-Egea et al[22], Watkins et al[30] and Alcam & Tinaz[31].

In this study, more pain observed in pre molar teeth than anterior group of teeth. This is supported by Segura-Egea et al[22] and Kalhoro & Mirza[32]. However, it disagree with lmura & Zuolo[7], who showed more pain in anterior teeth.

In conclusion, post obturation pain is one of the major factors when evaluating endodontic treatment. Incidence of pain more in 1st post obturation day and decreased thereby.

REFERENCES

1. Figini L, Lodi G, Gorni F, Gagliani M. Single versus Multiple visits for endodontic treatment of permanent teeth : A Cochrane Systemic Review. Journal of Endodontics, 2008; 34(9): 1041-47.
2. ELMubarak A.H.H, Abu-bakr NH, Ibrahim YE. Postoperative pain in Multiple visit and single visit root canal treatment. Journal of Endodontics, 2010; 36: 36-39.
3. Glennon J.P, Ng Y-L, Setchell D.J, Gulabi vala K. Prevalence of and factors affecting post preparation pain in patients undergoing two visit root canal treatment. International Endodontic Journal, 2004; 37: 29-37.
4. Oginni A.O, Udoye C.I . Endodontic Flare-ups : Comparison of incidence between single and multiple visit procedures in patients attending a Nigerian teaching hospital . BMC Oral Health, 2004;4(1): 4.
5. Walton R, Fouad A. Endodontic inter appointment flare-ups : a prospective study of incidence and related factors. Journal of Endodontics, 1992;18(4): 172-7.
6. Ng Y-L, Glennon J.P, Setchell D.J, Gulabivala K . Prevalence of and factors affecting post obturation pain in patients undergoing root canal treatment. International Endodontic Journal, 2004; 37: 381-391.
7. Imura N, Zuolo M.I. Factors associated with endodontic flare-ups : a prospective study . International Endodontic Journal. 1995 ; 28 : 261-5.
8. Grossman L. I, Oliet S , Del RioCE. Endodontic Practice. 11th edition ; Lea and Febiger , Philadelphia PA ; 1998.
9. Calhoun R. L, Landers R. R. One appointment Endodontics therapy : a nationwide survey of endodontists . Journal of Endodontics, 1982 ; 8 : 35-40.
10. Pekruhn R.B. Single visit endodontics therapy ; a preliminary Clinical study. Journal of the American Dental Association, 1981 ; 103(6) : 875-7.
11. Jureak J.J, Bellizzi R, Loushine R.J. Successful Single visit endodontics during operation Desert shield. Journal of Endodontics, 1993;198:412-13.
12. William S. Albasaireh ZSM, Alnegrish AS. Postobturation pain after single- visit and multiple –visit endodontic therapy. Journal of Dentistry, 1998;26:227-32.
13. Harqreaves KM. single visit more effective than multiple visit root canal treatment? Evidence based Dentistry, 2006; 7:13-14.
14. Eleazer P.D, Eleazer K.R. Flare-up rate in pulpally necrotic molars in one visit versus two visit endodontic treatment. Journal of Endodontics, 1998;24:614-6.
15. Kane AW, Sarr M, Faye B, Toure B, Ba A. Incidence of post operative pain in single session root canal therapy. Dakar Medicine, 1999;44(1):114-8.
16. Albashaireh Z.S.M, Alnegrish A.S. Post obturation pain after single and multiple –visit endodontic therapy. A prospective study. Journal of Dentistry, 1998;26:227-32.
17. AL-Negrish A.R, Habahbeh R. Flare up rate related to root canal treatment of asymptomatic pulpally necrotic central incisor teeth in patients attending a military hospital. Journal of Dentistry, 2006;34(9):635-40.

REFERENCES

18. Fox J, Atkinson J.S, Dinin A.P, Greenfield E, Hechtman E, Reeman CA, et al. Incidence of pain following one visit Endodontic treatment. Oral surgery Oral Medicine and Oral Pathology, 1970;30:123-30.
19. Mulhern JM, Patterson SS, Newton CW, Ringel AM. Incidence of post operative pain after one appointment Endodontic treatment of asymptomatic pulpal necrosis in single rooted teeth. Journal of Endodontics, 1982;8:370-5.
20. Alcam T. Incidence of post operative pain following the use of different sealers in immediate root canal filling. Journal of Endodontics, 1985;11:135-7.
21. Koba K, Kimura Y, Matsumoto K, et al. Post operative symptoms and healing after Endodontic treatment of infected teeth using pulsed Nd: YAG Laser. Endodontics and Dental Traumatology, 1999;15:68-72.
22. Segura –Egea J.J, Cisne ros-Cabello R, Liamas-Carreras J.M, Velasco-Ortega E. Pain associated with root canal treatment. International Endodontic Journal, 2009;42:614-20.
23. Jariwala S.P, Goel B.R. Pain in Endodontics. Causes, prevention and management. Endodontology, 2001;13:63-66.
24. Unru AM, Ritchie J, Merskey H. Does gender affect appraisal of pain and pain coping strategies? Clinical journal of pain, 1999;15:31-40.
25. Clem W.H. Post treatment endodontic pain. Journal of the American Dental Association, 1970;81:1166-70.
26. Maddox D.L. Walton R.E, Davis C.O. Incidence of post treatment endodontic pain related to medicaments and other factors. Journal of Endodontics, 1977;3:447-52.
27. Torabinejad M, Kettering J.D, Mc Graw J.C, Cummings R.R, Dwyer T.G, Tobias T.S. Factors Associated with Endodontics inter appointment emergencies of teeth with necrotic pulps. Journal of Endodontics, 1988;14:261-6.
28. O'Keefe E.M. Pain in Endodontic therapy: Preliminary study. Journal of Endodontics , 1976;2(10):315-9.
29. Cheng Y, Cheung G.S.P, Bian Z, Peng B. Incidence and factors associated with endodontic inter appointment emergency in a dental teaching hospital in China. Journal of Dentistry, 2006; 34:516-21.
30. Watkins C.A, Logan H.L, Kirchner H.L, Anticipated and experienced pain associated with endodontic therapy. Journal of the American Dental Association, 2002;133:45-54.
31. Alcam T, Tinaz A.C, Interappointment emergencies in teeth with necrotic pulps. Journal of Endodontics, 2002;28(5):375-77.
32. Kalhoro F.A, Mirza A.J. A study of Flare ups following single visit root canal treatment in Endodontic patients. Journal of the College of Physicians and Surgeons Pakistan, 2009;19(7):410-412.