

Incidence of Post-operative Pain in Single versus Multiple Visit Root Canal Treatment of Vital and Non-vital Single Rooted Teeth

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Abstract

Aim: The aim of the study is to evaluate the incidence of Post-operative pain in Single versus Multiple visit Root Canal treatment of vital and non-vital single rooted teeth in Jammu population.

Materials and Methods: 200 subjects were selected fulfilling the inclusion criteria and were divided into 2 groups of 100 subjects each. Group I included vital pulp subjects out of which 50 were endodontically treated in a single visit and 50 in multiple visits. Group II included non-vital pulp subjects out of which 50 were endodontically treated in a single visit and 50 in multiple visits. The subjects (both groups) were asked about their experience of post-operative pain and to rate it. A follow-up evaluation was made of the radiographic findings and clinical data. The data was subjected to statistical analysis using the chi-square test by SPSS software version 20.

Results: Statistically insignificant relationship was found between different genders and pain perception ($p=0.8006$). Also, no statistically significant relation of pain perception with age of the subjects ($p=0.9509$). It was also found that the difference in pain perception among individuals receiving endodontic treatment in single vs multiple visit was not significant ($p=0.9213$) and there was no significant difference in the incidence of post operative pain between vital and non vital teeth.

Conclusion: It can be concluded that there was no difference in the incidence of postoperative pain between vital and non vital teeth. The majority of patients in either group's reported no or only mild pain. Also, the number of visits does not have any impact on the amount of pain. However it is suggested that number of visits for endodontic treatment should be less to minimize the patient discomfort.

Key words: Root canal, Endodontic, Pain, Pulp, Jammu

INTRODUCTION

Traditionally, root canal treatment or endodontic treatment was performed in multiple visits, with medication between root canal preparation and obturation, which mainly aims to reduce or eliminate microorganisms and their by-

products from the root canal system before obturation. Multiple-visit root canal treatment (MV) is well-accepted as a safe and common therapy ^[1]; however, 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- (SV) and multiple-visit treatments. ^[2] Furthermore, the recent invention of rotary nickel-titanium systems and improvements in the understanding of irrigation dynamics and delivery systems have facilitated the mechanical instrumentation and disinfection of the root canal, which makes the single-appointment treatment more convenient than before. Along with other advantages including timesaving,

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cost-effectiveness, better patient acceptance, and reduction of the interappointment infection risks, single-visit root canal treatment has become an acceptable treatment regimen.^[3]

A one visit root canal treatment is attractive to a patient because it saves time and would probably reduce the cost of the procedure. In addition one visit treatment would be expected to be less stressful to the anxious patient. The patient is not disturbed by the additional anesthetic injections, the replacement of the rubber dam, the initial placement and later removal of intracanal medication and seals, and the time spent by the clinician in refreshing his memory and tactile sensation regarding prepared canal anatomy, tooth length etc. Furthermore, the problems of intervisit leakage, loss of temporary seal, or any of the accidents that can and do occur between the visits are solved. Perhaps the most important advantage is the prevention of root canal contamination and/or bacterial regrowth that can occur when the treatment is prolonged over an extended period.^[4]

The disadvantages of single visit procedures are also obvious. It eliminates some of the controls available in the multiple visit procedures, such as culturing to check the effectiveness of the biomechanical preparation and ability to apply “tincture of time”, to reevaluate tissue responses following treatment procedures and in the event of a flareup, the emergency procedures for drainage are complicated, since artificial fistulation or the removal of fillings is needed.^[4]

Numerous studies evaluating the effectiveness and post-treatment pain of single- versus multiple-appointment root canal treatment have been published, which reported no significant differences in effectiveness (healing rates) and postoperative pain between these 2 treatment regimens.^[5-7] However, most of the previous systematic reviews focused primarily on comparing procedures without considering the pretreatment pulpal status.^[5-7] Many studies have demonstrated the association of pulpal and periapical status with the outcome of endodontic treatment.^[8-12] The present study is conducted with the aim of the is to evaluate the incidence of Post-operative pain in Single versus Multiple visit Root Canal treatment of vital and non-vital single rooted teeth in Jammu population.

MATERIALS AND METHODS

Out of 453 subjects coming to the Department of Conservative Dentistry, Indira Gandhi Govt. Dental College, Jammu 200 subjects with an age range of 16 to

35 years of age were selected fulfilling the inclusion criteria and were divided into 2 groups of 100 subjects each.

Inclusion Criteria

- Permanent dentition
- Patients requiring endodontic treatment of anterior teeth

Exclusion Criteria

- Patients requiring endodontic treatment of anterior teeth
- Any systemic condition

Group I included vital pulp subjects out of which 50 were endodontically treated in a single visit and 50 in multiple visits. Group I included vital pulp subjects out of which 50 (25 Males and 25 females) were endodontically treated in a single visit and 50 (25 Males and 25 females) in multiple visits. Group II included non-vital pulp subjects out of which 50 (25 Males and 25 females) were endodontically treated in a single visit and 50 (25 Males and 25 females) in multiple visits.

The subjects (both groups) were asked about their experience of post-operative pain and to rate it as:-

Pain was recorded as none, slight, moderate, or severe:

- No pain: The treated tooth felt normal. Patients don't have any pain.
- Mild pain: Recognizable, but not discomforting, pain, which required no analgesics.
- Moderate pain: Discomforting, but bearable, pain (analgesics, if used, were effective in relieving the pain).
- Severe pain: Difficult to bear (analgesics had little or no effect in relieving the pain).^[13]

A follow-up evaluation was made of the radiographic findings and clinical data. The data was subjected to statistical analysis using the chi-square test by SPSS software version 20.

RESULTS

Table 1 showed that there was statistically insignificant relationship between different genders and pain perception ($p=0.8006$).

Table 2 showed no statistically significant relation of pain perception with age of the subjects ($p=0.9509$).

Table 3 showed that the difference in pain perception among individuals receiving endodontic treatment in single vs multiple visit was not significant ($p=0.9213$).

Table 4 showed that there was no significant difference in the incidence of post-operative pain between vital and non-vital teeth.

Table 1: Gender distribution for pain perception

| Gender | Post operative pain present | Post operative pain absent |
|---------|-----------------------------|----------------------------|
| Males | 53 | 47 |
| Females | 56 | 44 |
| | 49 | 51 |
| | 52 | 48 |

$\chi^2=1.003$, $df=3$, $\chi^2/df=0.33$, $P(\chi^2>1.003)=0.8006$

Table 2: Age distribution for pain perception

| Age (years) | Number of subjects | Post operative pain present | Post operative pain absent |
|-------------|--------------------|-----------------------------|----------------------------|
| 16-20 years | 43 | 24 | 19 |
| 21-25 years | 54 | 33 | 21 |
| 26-30 years | 59 | 35 | 24 |
| 31-35 years | 44 | 25 | 19 |

$\chi^2=0.347$, $df=3$, $\chi^2/df=0.12$, $P(\chi^2>0.347)=0.9509$

Table 3: Distribution of pain level in teeth

| Number of visits | Pain | | | |
|------------------|---------|------|----------|--------|
| | No pain | Mild | Moderate | Severe |
| SV | 19 | 31 | 28 | 22 |
| MV | 23 | 29 | 27 | 21 |

$\chi^2=0.489$, $df=3$, $\chi^2/df=0.16$, $P(\chi^2>0.489)=0.9213$

Table 4: Incidence of pain in vital and non vital teeth

| Vitality | Post operative pain present | Post operative pain absent |
|------------------|-----------------------------|----------------------------|
| Vital (n=100) | 61 | 39 |
| Nonvital (n=100) | 56 | 44 |

$\chi^2=0.515$, $df=1$, $\chi^2/df=0.51$, $P(\chi^2>0.515)=0.4730$

DISCUSSION

The study was conducted to evaluate the incidence of Post-operative pain in Single versus Multiple visit Root Canal treatment of vital and non-vital single rooted teeth in Jammu population.

The findings of our study showed that the frequency and severity of pain did not have a significant difference between vital and non vital teeth. These findings are in accordance with the results of Ince B *et al.* and Genet *et al.*^[14,15] However, various studies evaluated a number of factors concerning the etiology of postoperative and it was found that flare-ups are more likely to occur in necrotic cases than in vital cases.^[16,17]

The present study also found out there was no difference in pain perception of individuals, whether treated in a single visit or in multiple visits. Similar results were found by Ince B *et al.*^[14] in their study. Also one-visit therapy had some advantages like reducing the number of operative

procedures, which in turn reduces patient discomfort. However some studies in the past concluded that the number of treatment visits also has a significant effect on postoperative pain due to the high risk of inter-appointment microbial leakage through temporary restorations.

The results of the present study also revealed that there was no significant difference in the pain perception in different age groups which is in agreement with the studies done by Balaban FS *et al.* Eleazer PD *et al.* Matusow RJ and Kane AW *et al.* who found similar results but is contradictory to the findings of Toosy A. who concluded showed a positive correlation between post operative pain and advancing age.^[20-23]

The results of our study showed that there was no significant difference in the pain perception in different genders, which is also in agreement with the studies done by various researchers.^[22-25]

The current study had some limitations such as only single rooted teeth were evaluated for the incidence of post operative pain and different teeth in both the jaws with multiple roots should be considered to achieve more appropriate results about pain perception.

CONCLUSION

It can be concluded that there was no difference in the incidence of postoperative pain between vital and non vital teeth. The majority of patients in either group have reported no pain or only mild pain. Also, the number of visits does not have any impact on the amount of pain. However it is suggested that number of visits for endodontic treatment should be less to minimize the patient discomfort.

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