ORIGINAL ARTICLE

Comparison of Incidence of Post-obturation Flare-ups Following Single and Multiple Visit Root Canal Treatment

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ABSTRACT

Introduction: Post-operative pain and discomfort after endodontic treatment is an unwanted occasion for both the patient and the dentist. A flare up is a true complication characterized by the development of pain and swelling and requires emergency treatment. Certain factors such as pre-operative pain, numbers of appointments, use of intra-canal medication and tooth location, predispose to the development of post-operative pain and flare-ups.
Aim: The purpose of this study is to analyze the incidence of post-obturation flare-ups in teeth following single visit and multiple visits Root Canal Treatment in Operative dentistry Department, Baqai Dental College, 2010 to 2011. To observe effect of: (1) skill and experience, (2) Single and multiple visits (3) Gender.
Methodology: Total 60 patients requiring endodontic treatment in single rooted teeth were identified and included in this study. The patients were randomly assigned and treated in the department of Operative dentistry, Baqai Dental College into two groups. The teeth of patients in group 1 were with vital inflamed pulp treated in single visit. Group 2 were with vital inflamed pulp treated in multiple visits. They were asked whether they had experienced any postoperative pain within 1 hr, within 24 hrs, within 48 hrs. Dental practitioners included in this study were fresh graduates (C1), graduates with 5 years (C2) and 10+years (C3) clinical experience. Data was analyzed statistically using the chi-square test, SPSS version 19. P-value was set at 0.001.
Result: 3 males and 5 females patients complained of pain within 24 hrs of obturation that was sharp in nature and spontaneous; no complaint of pain was reported after 24 hrs without medication. The flare-up incidence came out to be 13.3%. All patients in this study suffered irrereversible pulpitis in which 25 were obturated in single visit, 30 in multiple visits in which 5:3complained of pain after obturation within 24 hrs. Fresh graduates performed root canal therapy on 20 patients, 20 with 5+years and 20 with 10+years clinical experience and the flare-up ratio regarding clinical experience was found to be 4:3:1 respectively.
Conclusion: It was concluded that the incidence of flare-up or post obturation pain is related to the number of visits, clinical experience of the dentist and gender of the patient.

Key words: Post operative flare-ups, single and multiple visit root canal treatment, clinical skills.

INTRODUCTION

Post-operative pain and discomfort after endodontic treatment is an unpleasant situation for both the patient and the clinician. Although post-operative pain associated with root canal therapy is a poor indicator of long-term success,[1] the occurrence and control of pain are of clinical interest in endodontics. Certain factors such as pre-operative pain,[2] number of appointments[3-5] use of intra-canal medication[6-7] and tooth location[8] predispose to the development of post-operative pain and flare-ups. It has also been observed that female patients had more post-operative pain than male patients.[9] Maxillary lateral incisor shows a higher incidence of post-operative pain due to missed canals.[10]

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Flare-up is defined as complaint of pain or swelling, or combination of both within a few hours to a few days after root canal treatment procedure.[11] This usually disrupts patient's lifestyle and requires unscheduled visit.

Current literature on single visit versus multiple visit endodontics[12-13] provides conflicting opinion and recommendations, however recent clinical reports, have shown that patients generally tolerate and prefer single visit root canal therapy.[14-16] Therefore, single visit root canal treatment has become a common practice as it has several advantages, including a reduced flare-up rate, decreased number of operative procedures and no risks of inter-appointment leakage through temporary restorations.[17-19] Some studies report slightly more post-obturation pain following single visit as compare to multiple visit procedure,[20-21] while others, no significant difference was found in the post-obturation pain experienced by patients following single or multiple visit treatment procedures.[22]

The purpose of this study was to see the incidence of post-obturation flare-ups in teeth following single visit and multiple visits Root Canal Treatment in Operative Dentistry Department, and its relation with the clinical experience of the dentist at Baqai Dental College between 2010 and 2011.

MATERIALS AND METHODS

This clinical trial conducted at Operative Dentistry Department, Baqai Dental College, 2010-2011, comprised 60 patients of pulp pathosis requiring root canal therapy who were invited to participate. These patients were randomly assigned for single and multiple visit treatment. The dental practitioners included in this study were fresh graduates, graduates with 5+ years, and graduates with 10+ years of clinical experience.

The patients were informed of the risks, aims, and possible conclusions of the study, and they signed informed consents. All Patients with vital pulp without periapical radiolucency were included in the study. Patients were excluded from the study if one or more of the following conditions were observed: (1) debilitating disease (2) radiolucency before starting the treatment (3) antibiotic therapy given pre-operatively or post-operatively (4) extrusion of filling material into periapical tissues (5) sinus tract (6) tooth within cystic cavity or tumor lining (7) tooth mobility.

The pulp vitality was determined by hot and cold thermal test. After administering local anesthesia using 2% lignocaine 1:80,000 epinephrine, an access cavity was made and working length was determined radiographically. The root canals were cleaned and shaped using the step-back technique, K- hand files, and Gates-Glidden drills (Dentsply/Maillefer, Ballaigues, Switzerland). Each K- file was followed by irrigation of the canal with 2mL sodium hypochlorite (2.25%) in a syringe with a 27-gauge needle. Irrigation was carried out with an endodontic Monoject syringe (3 mL, 27-gauge needle; Pierre Rolland, Merignac, France) to ensure that the irrigant reached the apex. Each root canal was dried with paper points (K Dent, Korea), filled with gutta percha points (K Dent, Korea) using lateral condensation obturation technique and sealapex (Sybron endo, CA) as a sealer. Patients with 2 visit root canal treatment were recalled after one week for obturation. At the end of initial appointment, the root canals were medicated with $Ca(OH)_2$ and covered by a dry sterile cotton pellet and sealed by temporary filling material, cavit (3M ESPE, Germany). The patients were asked to note the time duration, if they experienced postobturation pain within 1 hr, within 24 hrs or within 48 hrs. Flare-up is defined as complaint of pain or swelling, or combination of both within a few hours to a few days after root canal treatment procedure.[11] The level of pain was recorded as no pain, mild pain, moderate pain and severe pain. Patients with severe post obturation pain or occurrence of swelling were classified as flare-ups. The incidence of post obturation discomfort was recorded and expressed as percentages.[23] Data was statistically analyzed using chi-square test, SPSS version 19. Significant p level was set at .001. A standard form was constructed to evaluate comparison of post-obturation flare-ups following single and multiple visit root canal treatment.

RESULTS

The study comprised of 60 cases of pulp pathosis with vital pulp requiring root canal treatment of which, 30 were males and 30 were females. In 3 males and 5 female patients, there was a complaint of pain within 24 hrs of obturation that was sharp in nature and spontaneous. No complaint of pain was reported after 24 hrs without medication. The flare-up incidence came out to be 13.3%. In females 5 out of 30 experienced pain, whereas 3 males complained of pain out of 30, so the ratio came out to be 5:3 (Table 1).

Table 1: Incidence of post obturation flare-ups

Group	No. in Study	No. Flare-ups	Flare-ups Present
Female	30	25	5
Male	30	27	3

All patients in this study suffered irreversible pulpitis in which 30 were obturated in single visit and 30 in 2 visits, in which 5:3 came out with pain after obturation within 24 hrs (Table 2).

Table 2: Incidence of post obturation flare-ups

Group	No. in Study	No. Flare-ups	Flare-ups Present
Single Visit	30	25	5
Multiple Visit	30	27	3

Fresh graduates performed root canal therapy on 20 patients, 20 by 5+years and 20 by 10+years clinical experience, so the flare- up ratio regarding clinical experience is 4:2:1. (Table 3).

Table 3: Incidence of post obturation flare-ups

Group	No. in Study	No. Flare-ups	Flare-ups Present
Fresh Gruaduate	20	16	4
5+ Years Clinical Experience	20	17	3
10+ Years Clinical Experience	20	19	1

DISCUSSION

Root canal treatment is a procedure that requires skills and experience. In this study, the frequency rate came out to be 13.3%, a high incidence of flare-up results when root canal was performed in single visit. Despite disadvantages, many endodontists prefer to complete root canal in single visit rather than multiple visits, as it is less time consuming and many patients insist to get the root canal treatment completed in a single visit. In recent decades, the discussion on single and multiple root canal treatment has gained attention,[24-25] however until now, no consensus has been reached, many endodontists do not prefer to complete the root canal treatment in single visit in order to prevent post obturation flare-ups. In this study the result showed that out of 30 patients who were obturated in a single visit, 5 patients returned with the complaint of severe pain within 24 hrs, while 3 patients out of 30 patients complained of severe pain within 24 hrs obturated in multiple visits, the ratio came out to be 5:3. So more flare-ups occurred in single visit than in the multiple visit group, showing a disadvantage for single visit treatment and we have also observed during our study that, in Pakistan and probably in most developing countries, patients do not seek dentists for treatment until and unless experienced severe pain, tried self prescribed analgesics and insisted that their root canal treatment should be completed in a single visit. Pre-operative symptoms of severe pain and swelling may explain the high incidence of flare-ups reported in the present study.

The study also showed that female patients experienced more post-obturation pain than male patients; the study reported 5 females and 3 male patients, so the ratio came out to be 5:3. Various studies showed that female patients have more sensitive responses to root canal treatment than male patients, since the definition of flare-ups is relatively subjective, it may be easier for female than male patients to feel and remember the discomfort after root canal treatment even when they undergo the same treatment. This might have led to more female cases of flare-ups being reported by this clinical trial.[26]

This clinical study was related to post-treatment flare-ups, as many variables such as the criteria for evaluating the results and the root canal treatment technique needed to be classified. In previous studies, post-obturation pain after nonsurgical Root Canal Treatment has been reported to range from approximately 3% to more than 50%,[27-28] this is in contrast with the findings of Eleazer & Eleazer[29] who reported fewer flare-ups for the single visit group 3.0% and 8.0% for the multiple visit group. Other studies also have reported lower incidence figures for endodontic flare-ups[30-31] in the United States of America reported an incidence of 3.17%,[30] while in Brazil reported a further lower figure of 1.58%. The present study showed incidence of 13.3% after root canal treatment,[29] it appears when root canal treatment is performed with scientifically based techniques, by skillful operators low overall incidence of endodontics flare-ups can be expected. In this study, we also included operators with 5+years and 10+years clinical experiences, each of them performed 20 patients respectively, and the fresh graduates performed root canal treatment on 20 patients, out of which 4 patients reported severe pain. It was expected that fresh graduates will come up with more flare-ups when compared to teeth treated by operators with 5+ and 10+ clinical experience. This can possibly be explained by operators with sufficient Root canal treatment experience using sound biological principles and contemporary techniques, can achieve good endodontic outcomes after Root canal treatment, resulting in difference in the occurrence of flare-ups between the operators with 5+ and 10+ clinical experience and fresh graduates. This clearly indicates that clinical experience also matters in the outcome of flareup incidence, the ratio came out to be 4:3:1. Therefore the higher flare-up incidence rate should not be marked as a key factor for the single visit endodontic therapy; it should however stress the fact that a thorough understanding of the basic endodontic principles is important in considering each case on an individual basis before making a decision as to whether or not it can be completed in one visit.[26]

CONCLUSION

The present study concluded that incidence of post-operative flare-up was high and depends upon the number of visits, gender and the clinical experience. These factors play a strong role in flare-up incidence or post obturation pain.

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