

## Original Research

### To compare influence of intracanal medicaments like calcium hydroxide and tri antibiotic paste on management of flare ups

Lukka Jagadish Babu<sup>1</sup>, Aswathy Krishna<sup>2</sup>

<sup>1,2</sup>Post graduate student, Department of Orthodontics, Maharaja ganga Singh Dental College Sriganganagar, Rajasthan, India

#### ABSTRACT

**Background:** An endodontic flare-up is a complication of endodontic treatment which is defined as an acute exacerbation of asymptomatic pulpal or periapical pathoses after the initiation or continuation of root canal treatment. The present study was conducted to compare influence of intracanal medicaments like calcium hydroxide and tri antibiotic paste on management of flare ups. **Materials & Methods:** The present study was conducted on 60 patients requiring root canal treatment in mandibular posterior teeth. Patients were divided into 3 groups. In group I, patients no intracanal medicament was used. In group II, calcium hydroxide paste was used as medicament and in group III, triple antibiotic paste was used. All the treated patients were prescribed paracetamol tablets and received a questionnaire to record their pain on days 1st, 3rd, 7th, and 14th. **Results:** In group I, there was 2 cases of flare ups on day 1<sup>st</sup>, 1 case on day 3<sup>rd</sup> and 1 case on day 7<sup>th</sup>, in group II, there was 1 case both on 3<sup>rd</sup> and 7<sup>th</sup> day and in group III, there was 1 case on day 3<sup>rd</sup>. The difference was significant ( $P < 0.05$ ). **Conclusion:** Authors found that triple antibiotic paste is more effective as compared to calcium hydroxide paste in preventing flare ups in endodontics.

**Key words:** Calcium hydroxide, Flare up, Triple antibiotic paste

Received: 4 October, 2019

Revised: 1 November, 2019

Accepted: 5 November, 2019

**Corresponding author:** Dr. Lukka Jagadish Babu, Post graduate student, Department of Department of Orthodontics, Maharaja ganga Singh Dental College Sriganganagar, Rajasthan, India

**This article may be cited as:** Babu LJ, Krishna A. To compare influence of intracanal medicaments like calcium hydroxide and tri antibiotic paste on management of flare ups. J Adv Med Dent Scie Res 2019;7(12): 16-18.

#### INTRODUCTION

An endodontic flare-up is a complication of endodontic treatment which is defined as an acute exacerbation of asymptomatic pulpal or periapical pathoses after the initiation or continuation of root canal treatment. Postoperative pain after endodontic treatment is an undesirable yet very common occurrence. Even with strict precautions taken, people still experience varying degrees of residual pain or even exaggerated responses during and following root canal treatment.<sup>1</sup>

Inter-appointment flare-up may be defined as the occurrence of severe pain, swelling, or both, following an endodontic treatment appointment, which requires an unscheduled visit for emergency treatment. It is reported that patients with diabetes mellitus are prone to severe endodontic infections and have increased

incidence of flare-up. This is attributed to alterations in immune functions and the presence of more virulent microorganisms in root canals of diabetic patients.<sup>2</sup>

Calcium hydroxide (CH) has been the most commonly used medicament, and its dressing is shown to provide more bacteria-free canals than those devoid of any dressing. Local application of antibiotics in the root canal has been suggested to overcome the potential risk of adverse systemic effects of antibiotics and as an effective mode for drug delivery in teeth lacking blood supply due to necrotic pulps or pulp-less status.<sup>3</sup> Because root canal infections are polymicrobial consisting of both aerobic and anaerobic bacterial species, single antibiotic may not be effective in canal disinfection. Therefore, combination of antibiotics, mainly consisting of ciprofloxacin, metronidazole and

minocycline, referred to as triple antibiotic (TA) paste has been suggested for root canal disinfection.<sup>4</sup> The present study was conducted to compare influence of intracanal medicaments like calcium hydroxide and tri antibiotic paste on management of flare ups.

**MATERIALS & METHODS**

The present study was conducted in the department of Conservative dentistry. It comprised of 60 patients requiring root canal treatment in mandibular posterior teeth. The study was approved from institutional ethical committee. All patients were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc was recorded. Root canal treatment was initiated under local anesthesia and

**RESULTS**

rubber dam isolation. Bio mechanical preparation was performed following all standardized procedures. Following instrumentation and irrigation, canals were dried. Patients were divided into 3 groups. In group I, patients no intracanal medicament was used. In group II, calcium hydroxide paste was used as medicament and in group III, triple antibiotic paste was used.

All the treated patients were prescribed paracetamol tablets and received a questionnaire to record their pain on days 1st, 3rd, 7th, and 14th. Inter-appointment flare-up was assessed using verbal rating scale (VRS). Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**Table I Distribution of patients**

Groups	Group I	Group II	Group III
Medicament	No medicament	Calcium hydroxide	Triple antibiotic paste
Number	20	20	20

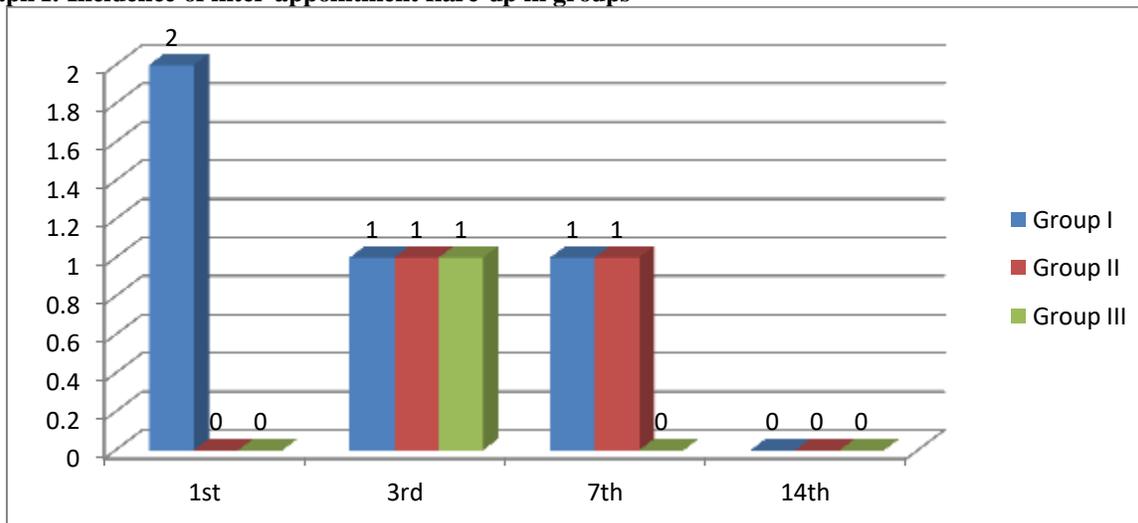
Table I shows that in group I, patients no intracanal medicament was used. In group II, calcium hydroxide paste was used as medicament and in group III, triple antibiotic paste was used.

**Table II Incidence of inter-appointment flare-up in groups**

Days	Group I	Group II	Group III	P value
1 <sup>st</sup>	2	0	0	0.01
3 <sup>rd</sup>	1	1	1	1
7 <sup>th</sup>	1	1	0	0.4
14 <sup>th</sup>	0	0	0	0

Table II, graph I shows that in group I, there was 2 cases of flare ups ion day 1<sup>st</sup>, 1 case on day 3<sup>rd</sup> and 1 case on day 7<sup>th</sup>, in group II, there was 1 case both on 3<sup>rd</sup> and 7<sup>th</sup> day and in group III, there was 1 case on day 3<sup>rd</sup>. The difference was significant (P< 0.05).

**Graph I: Incidence of inter-appointment flare-up in groups**



## DISCUSSION

Flare-ups are frequent complications which are disturbing to both patients and clinicians and are the cause of majority of endodontic emergencies resulting in unscheduled visits for treatment. A flare-up is characterized by pain and/or swelling that may arise following initial debridement of the root canals or even after obturation.<sup>5</sup> The severity of a flare-up varies according to the severity of the patient's pre-operative pathosis, signs and symptoms. Flare-ups can also be caused by inadequate debridement and disinfection of the root canals, microbial persistence after instrumentation, over-instrumentation, irrigant extrusion or apical extrusion of infectious debris during instrumentation.<sup>6</sup> Flare-ups can also be related to a variety of other causes. The prevalence of post-operative pain in numerous studies done in different settings have shown rates as low as 0.39% and rates as high as 20%. The incidence of postoperative pain following endodontic treatment was reported to be from 3% to 58%. The occurrence of flareups will have a significant impact on the patients and the clinicians. A thorough understanding of the etiology of flare-ups is required to prevent, properly diagnose and effectively manage patients presenting with pain or swelling.<sup>7</sup> The present study was conducted to compare influence of intracanal medicaments like calcium hydroxide and tri antibiotic paste on management of flare ups.

In present study, Patients were divided into 3 groups. In group I, patients no intracanal medicament was used. In group II, Calcium hydroxide paste was used as medicament and in group III, triple antibiotic paste was used. Pai et al<sup>8</sup> found that overall incidence of inter-appointment flare-up among diabetic patients was found to be 16%. In group I, 50% of the patients and in group II, 15% of the patients developed inter-appointment flare-up. However, no patients in group III developed inter-appointment flare-up. The comparison of these results was found to be statistically significant. However, with respect to intergroup comparison, only the difference between groups I and III was found to be statistically significant.

We found that in group I, there was 2 cases of flare ups on day 1<sup>st</sup>, 1 case on day 3<sup>rd</sup> and 1 case on day 7<sup>th</sup>, in group II, there was 1 case both on 3<sup>rd</sup> and 7<sup>th</sup> day and in group III, there was 1 case on day 3<sup>rd</sup>. The microbiota in flare-ups and refractory or failed cases are different from untreated cases, the former having more of gram negative, facultatives and anaerobes and latter having more gram positive bacteria. The oxygen tension and oxidation-reduction potential are higher in coronal portion of the canals, thus housing facultatives and aero-tolerant anaerobes. Anaerobes are significantly

higher in the apical third of the root canal due to the anaerobic conditions of the area.<sup>9</sup>

Individually, ciprofloxacin has broad spectrum activity and acts against both Gram-positive and Gram-negative bacteria by inactivating enzymes and inhibiting cell division. Metronidazole is effective against obligate anaerobes, which are common in the deep dentin of infected root canals and acts by disrupting bacterial DNA. Minocycline is a broad-spectrum tetracycline antibiotic and acts by inhibiting protein synthesis and inhibiting matrix metalloproteinase enzyme. Combination of these three antibiotics overcomes bacterial resistance and achieves higher antimicrobial action. Previous studies have shown favorable results when antibiotic mixture of ciprofloxacin, metronidazole, and minocycline has been used as topical root canal agents.<sup>10</sup>

## CONCLUSION

Authors found that triple antibiotic paste is more effective as compared to calcium hydroxide paste in preventing flare ups in endodontics.

## REFERENCES

1. Iqbal M, Kurtz E, Kohli M, Incidence and factors related to flare-ups in a graduate endodontic programme, *International Endodontic Journal* 2009; 99-104.
2. Morse DR, Koren LZ, Esposito JV, Goldberg JM, Belott RM, Sinai IH et al, Asymptomatic teeth with necrotic pulps and associated periapical radioluscencies: relationship of flare-ups to endodontic instrumentation, antibiotic usage and stress in three different time periods, *International journal of Psychosomatic research* 1986; 5-87.
3. Sathorn C, Parashos P, Messer H, The prevalence of post-operative pain and flare-up in single- and multiple- visit endodontic treatment : A systematic review, *Internayonal Endodontic Journal* 2008; 91-99.
4. Dean Baugh, James Wallace, The role of apical instrumentation in root canal treatment: A review of the literature, *Journal of Endodontology* 2005; 31(5): 333-340.
5. J.F. Siqueira, Aetiology of root canal treatment failure: why well-treated teeth can fail, *Int endod J* 2001; 1-10.
6. Ghodduji J, Javidi M, Zarrabi MH, Bagheri H. Flare-ups incidence and severity after using calcium hydroxide as intracanal dressing. *N Y State Dent J.* 2006;72:24-8.
7. Mohammadi Z, Abbott PV. On the local applications of antibiotics and antibiotic-based agents in endodontics and dental traumatology. *Int Endod J.* 2009;42:555-67.
8. Pai S, Vivekananda Pai AR, Thomas MS, Bhat V. Effect of calcium hydroxide and triple antibiotic paste as intracanal medicaments on the incidence of inter-appointment flare-up in diabetic patients: An in vivo study. *J Conserv Dent.* 2014;17(3):208-119.
9. Hoshino E, Kurihara-Ando N, Sato I, Uematsu H, Sato M, Kota K, et al. In vitro antibacterial susceptibility of bacteria taken from infected root dentine to a mixture of ciprofloxacin, metronidazole and minocycline. *Int Endod J.* 1996;29:125-30.
10. Yadlapati M, Souza LC, Dorn S, Garlet GP, Letra A, Silva RM. Deleterious effect of triple antibiotic paste on human periodontal ligament fibroblasts. *Int Endod J.* 2013; 1-5.