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Incidence of Flare up after Single and Multiple Visit Endodontic Treatment in Mandibular Molars

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ABSTRACT

Aim: To compare the incidence of flare up between single visit and multiple visits endodontic therapy in mandibular molars to find the best possible treatment for the patient in minimal time and cost.

Method: A retrospective study was done in Department of conservative dentistry and endodontics. A total of 300 endodontically treated mandibular molars were selected. They were divided into two groups- Group 1 where single visit endodontic treatment was done and Group 2 where multiple visit endodontic treatment was done using the same techniques. Incidence of flare up was evaluated on the basis of age, gender and preoperative diagnosis between both the groups.

Result: Flare up rate was found to be higher in females and in the age group of 40-60 years. The incidence of flare up was independent of preoperative pulp and periapical status in single visit and multiple visit endodontic therapy.

Conclusion: Single visit endodontic treatment can be safely carried out in all cases of symptomatic, asymptomatic irreversible pulpitis and chronic apical periodontitis if meticulous biomechanical preparation and irrigation is done. Flare up was found to be more in 40-60 year age group and in females.

Keywords: Flare-up, single visit endodontic treatment, multiple visit endodontic treatment, irreversible pulpitis, chronic apical periodontitis

INTRODUCTION

The primary goal of endodontic treatment is to remove or reduce the microbes from root canal space by chemo-mechanical preparation and to prevent recurrence of infection and promote periapical healing by proper sealing of the space. [(1)] It can be carried out in single as well as multiple visits. Both single and multiple visit endodontic therapy have certain pros and cons.

The advantages of single visit root canal treatment are reduction in treatment time, cost effective and reduction in interappointment contamination of root canals but an important disadvantage is that if flare-up occurs, it is difficult to establish drainage through obturated tooth. Multiple visit therapy allows the use of intracanal medicaments like calcium hydroxide and is also easier to manage in case of any flare-ups. [(2)]

Flare-up is swelling and/or pain, within few days following an endodontic appointment, which requires an unscheduled emergency visit by patients to relieve the symptoms. [(3)]

Flare-ups are undesirable and embarrassing as it requires an unscheduled visit and causes great discomfort to patient due to pain and swelling. So, it is essential that the number of cases with flare up is as low as possible.

AIMS AND OBJECTIVES

To evaluate and compare the incidence of flare up when single visit and multiple visit endodontic therapy is carried out in mandibular molars such that best possible treatment can be provided to the patient in minimal time and cost.

METHODOLOGY

A retrospective study was carried out in Department of Conservative Dentistry and Endodontics for patients between Jan 2016 to Dec 2018. Dental records of 300 patients who had undergone endodontic treatment in the same clinical set up using

the same techniques of biomechanical preparation and obturation and with complete dental records were retrospectively evaluated for the study.

All patients with endodontically treated mandibular molars having diagnosis of symptomatic, asymptomatic irreversible pulpitis and chronic apical periodontitis were evaluated for this study. The criteria for exclusion were medically compromised patients, pregnancy and immunocompromised patients.

The patients were divided into two groups.

Group 1: 150 cases of single sitting endodontic therapy

Group 2: 150 cases of multiple visit endodontic therapy

In single visit endodontic treatment the protocol followed was application of rubber dam, preparation of access cavity, determination of working length by apex locator and confirmed by IOPA radiograph. Biomechanical preparation was done using protaper technique with protaper files (Dentsply Switzerland) Irrigation was done thoroughly using 1.25% sodium hypochlorite, 17% EDTA and CHX. Obturation was done with protaper cones (Dentsply Maillefer, Switzerland) and accessory cones by lateral condensation technique using zinc oxide eugenol (Prime Dental Products Private Ltd., India) as a sealer. Post endodontic restoration was done with amalgam (DPI).

In multiple visit, rubber dam application followed by preparation of access cavity, working length determination by apex locator and confirmation by IOPA radiograph was done in first sitting. In same sitting, biomechanical preparation was done by protaper technique using protaper rotary files (Dentsply Switzerland). Irrigation was done thoroughly using 1.25% sodium hypochlorite, 17% EDTA and CHX solution. Calcium hydroxide was placed as an intracanal medicament. Obturation was done in the next sitting in cases which were asymptomatic by protaper cones (Dentsply Maillefer, Switzerland) and accessory cones by lateral condensation technique using zinc oxide eugenol (Prime Dental Products Private Ltd., India) as a sealer. Post endodontic restoration was done with amalgam (DPI).

RESULTS

Both the groups were evaluated on the basis of age, gender and diagnosis. Flare up rate was found to be higher in females and in the age group 40-60 years. (Table-1 & Table-3) There was no significant difference in flare up in single and multiple visit endodontic therapy irrespective of pulp and periapical status. (Table-2)

Table – 1 (Flare up and age)

AGE (Years)	TOTAL NO. OF CASES	FLARE UP	FLARE UP %
18-40	140	1	0.71%
40-60	160	7	4.3%

Table – 2 (Flare up and preoperative diagnosis)

DIAGNOSIS	TOTAL NO OF CASES	SINGLE VISIT CASES	MULTIPLE VISIT CASES	FLARE UP in SINGLE VISIT	FLARE UP in MULTIPLE VISIT
SYMPTOMATIC IRREVERSIBLE PULPITIS	160	70	90	2(2.8%)	3(3.3%)
ASYMPTOMATIC IRREVERSIBLE PULPITIS	80	50	30	1(2%)	0(0%)
CHRONIC APICAL PERIODONTITIS	60	30	30	1(3.3%)	1(3.3%)

Table- 3 (Flare up and Gender)

GENDER	TOTAL NO OF CASES	FLARE UP	FLARE UP %
MALE	180	2	1.1%
FEMALE	120	6	5%

DISCUSSION

The present study was undertaken to compare incidence of flare up in single and multiple visit endodontic therapy in mandibular molars. Multiple visit

endodontic treatment was done in earlier times as it allowed the placement of intracanal medicament before obturation. Multiple-visit root canal treatment is well-accepted as a safe and common therapy.

But now in recent times single visit endodontic treatment has gained acceptance with the advent of Niti system, advancements in the field of irrigants and irrigation delivery systems, more reliable apex locators, ultrasonics, microscopic endodontics. digital radiography, newer obturation systems and biocompatible sealing materials. [(4)] This has revolutionized endodontic treatment.

There has been reduction in treatment time and cost for the patients. Single visit therapy also reduces the chances of interappointment contamination of root canal. No significant differences in antimicrobial efficacies have been reported between the single- and multiple-visit treatments. [(5)]

In our present study, we have not found any significant difference in incidence of flare up between single and multiple visit endodontic treatment in symptomatic and asymptomatic irreversible pulpitis and in cases of chronic apical periodontitis. Single-visit root canal treatment can be considered as a viable option for treatment of teeth with periapical pathology. [(6)] The concept of success of single visit root canal treatment is based on the entombing theory, according to which large number of microorganisms are removed during cleaning and shaping and the remaining bacteria entombed by the root canal obturation, therefore it will miss the essential elements to survive due to lack of nutrition and space. [(4,7)] In addition, the antimicrobial activity of the sealer or the zinc (Zn) ions of gutta-percha can kill the residual bacteria. [(4,8)] Another possible reason for less single visit flare ups is the deletion of the intracanal medication, which may elicit an immune reaction. Still, another possibility is that early sealing of the canal eliminates bacterial ingress from a leaky restoration, lateral canal, or caries. [(9)]

Single visit endodontics is a safe procedure in vital as well non vital teeth. [(10)] It has been shown that the clinical efficacy of sodium hypochlorite irrigation in control of root canal infection is much more than the effectiveness of interappointment calcium hydroxide dressing. Sodium hypochlorite has been found to be more effective than calcium hydroxide against E. faecalis. [(10)]

In many studies success rate for teeth with preoperative diagnosis of irreversible pulpitis was found to be very high in single visit endodontic therapy which is in accordance to our study. [(11)]

In our study, flare up was age and gender dependent. Incidence of flare up was significantly more in the 40-60 year age group. This could be related to the changes in both humoral and cell-mediated immunity that occur naturally due to aging. [(12)]

Flare up was more in female patients as they have a tendency to develop postoperative pain as they are more prone to psychosomatic disorders and their symptoms are governed by these emotional turbulences. Changes in female hormonal levels during menstruation, hormone replacement therapy, and oral contraceptives can alter the levels of serotonin and noradrenaline levels, thus contributing to decreased pain threshold. [(13,14)]

CONCLUSION

Single visit endodontic treatment can be safely carried out in all cases of symptomatic, asymptomatic irreversible pulpitis and chronic apical periodontitis if meticulous biomechanical preparation and irrigation is done. There is no significant difference in incidence of flare up between single and multiple visits. But flare up was found to be more in age 40 – 60years of age group and in females.

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