



Comparison the effect of different irrigation on post-operative pain in cases with irreversible pulpitis

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Abstract

the aim of this study was to evaluate the effect of different types of irrigants solution on postoperative pain after root canal treatment.

Materials and method: 75 patients with irreversible pulpitis on the lower mandibular premolars teeth, after diagnosis all cases were treated in a single visit in a private clinic over a period of 18 months. selected for this investigation endodontic treatment for the teeth using a wave one technique and then we divided the patients into 3 groups each group consist of 25 patients : in G.I irrigated with sodium hypochlorite (NaOCl).G.II irrigated with chlorhixidine and G.III irrigated with NaOCl, followed by EDTA 17% then CHX (using conventional needle irrigation was performed with a 27-G (Appli-Vac) needle and syringe). The needle was placed short of the binding point or 2mm from the working length and irrigant was expressed over 30 seconds.)after irrigation the canals Will dried with paper point then obuterated it with guttapercha , a temporary filling covered the teeth after that we asked the patient to record the postoperative pain after 6_12h , 24_48 h & one week , by using annual scale(AVS)the results show that the pain in G.III is the lowest pain than the other two groups.

Conclusion the uses of the combination of irrigants solution resulting in less postoperative pain after endodontic treatment.

The aim is to compare the effect of different irrigants solution on postoperative pain after root canal treatment.

Key words: endodontic treatment, root canal irrigants, root canal treatment and postoperative pain.

Introduction

An institutionalized administration of toothache needs the blend of right analysis took after by exhaustive treatment design. Endodontic treatment is one of the procedure that help chronic or acute toothache ⁽¹⁾. A standout amongst the most critical goals of endodontic treatment is to

totally dispose of intracanal microorganisms from the root canal system to make favorable condition for mending and to anticipate reinfection to make long haul progress⁽²⁾.

The shaping of the canal is the after effect of endodontic instrumentation while the cleaning result from

No.:1 2019

irrigation so we have chemical and mechanical readiness. In the event that instrumentation were 100% successful in expelling all microorganisms and debris from the root canals, irrigation would be an irrelevant subordinate to mechanical debridement. There are three fundamental classifications of irrigants: greases, disinfectants, and chelating operator. The irrigation utilized just to grease up and encourage root canal instrumentation⁽³⁾. The root canal irrigant ought to have great antimicrobial adequacy, nontoxic to periapical tissues, capacity for dissolving necrotic tissue, ready to grease up the canal, and help in smear layer removal^(4,5). As of late, last irrigation procedures have developed to upgrade root canal cleaning by giving antimicrobial action amid application as well as keeping up action after treatment⁽⁶⁾.

The sodium hypochlorite (NaOCl) has been widely utilized as root canal irrigation because of its intense antimicrobial action and tissue dissolving capacity⁽⁷⁾ many examination have proven the viability of NaOCl for bacterial decrease not withstanding mechanical cleaning and shaping⁽⁸⁾. The Sodium hypochlorite works as a result of its capacity to hydrolyze and oxidize cell proteins, its arrival of free chlorine, and its pH of 11 to 12⁽⁹⁾, But it has a few unwanted qualities, for example, tissue toxicity, danger of subcutaneous emphysema, unfavorably susceptible potential, and unpalatable smell and taste⁽¹⁰⁾. Additionally Sodium hypochlorite conveys danger of extrusion into periapical tissues causing aggravation, ecchymoses, hematoma, and now and then even rot and paresthesia^(11,12). Chlorhexidine 2% (CHX) digluconate has been recommended as root canal irrigant as a result of it has a wide antimicrobial range and is successful

against both gram-negative and gram-positive microorganisms and additionally yeasts. The fluid readiness is both less demanding to get into the trench and escape the canal⁽¹³⁾, at low focus, it has bacteriostatic impact. At higher fixation, it has bactericidal impact because of precipitation and coagulation of intracellular constituents. The most chelating specialist utilized as a part of endodontic for expelling waterway divider smear layer and opening dentin tubule is EDTA (ethylenediaminetetraacetic corrosive)^(14,15,16)

Administration of tooth pain needs the combination of right finding took after by thorough treatment design. In human body the significant sickness is disease set up that happen inside couple of hours or days causing postoperative pain after endodontic treatment⁽¹⁷⁾. There are a few elements effect postoperative agony incorporate microbial components the impacts of chemical restorative wonders identified with immune system, psychological factor and changes incorporate adjustment and the periapical tissue that can bring out torment sensation incorporate drug or watering arrangement⁽¹⁸⁾. Additionally, the regular elements adding to postoperative agony and distress after root waterway treatment incorporate into satisfactory instrumentation, expulsion of irrigants arrangement, expulsion of intracanal dressing, horrendous impediment, missed trench⁽¹⁹⁾. The frequency of postoperative pain subsequent to endodontic treatment run from 1.4 - 16% .

Methods and material

Seventy-five patient's age gone from 18 to 50, of total patients, 45 were male and 30 were female. with

No.:1 2019

irreversible mandibular premolars teeth. All patients were dealt with by one clinician keeping in mind the end goal to limit relational fluctuation in treatment system, after anesthetized the patients with neighborhood anesthesia arrangement the teeth secluded with an rubber dam then the preparation of the root canals was performed utilizing sterile carbide bur, to make direct access to root canal access and foundation of the working lengths by utilizing an electronic root canal device (Root ZX; Morita Corporation, Kyoto, Japan) and affirming the estimations with a periapical radiograph. The working length of each root canals was set at 1 mm not exactly the radiographic apex. Any teeth where the working length had been overestimated or where instruments had coincidentally been put past the working length were avoided from the examination. The root canal of all teeth were prepared Wave One single record system. After the biomechanical planning, Endoseptone (PD, Switzerland) utilized as intra-canal medicament and the entrance hole fixed by resin reinforced glass ionomer (SDI, Australia). All teeth were equivocated utilizing a sterile cotton pellet and cavit and the occlusion was checked. The seventy five patients were partitioned by the sorts of irrigants arrangement into :

Group I irrigated with sodium hypochlorite (NaOCl) 2.5% solution.

Group II irrigated with chlorhixidine 2%

Group III irrigated with NaOCl +17% EDTA + CHX

The irrigation is done by a syringe I connected to a 27 gauge needle after I instrumentation. The patients were calibrated and asked to mark their pain on a visual analogue scale at

(6_12hours), (24_48hours) and (one week) postoperative pain intervals. After root canal treatment the patients who had severe pain or other side effect could contact us to receive a device or medication .**Statistical analysis** using Chi sque test.

Results

The results show that the Percentage of pain intensity from time between 6-12 hr to 1 week in three groups, there was significant between groups in 24-48h and 1week $p=0.049$ $P<0.05$ present in (Table1). For all groups the maximum pain decreased over time. The result showed that the pain intensity decreased about 100% in GIII within one week followed showed in (Table4) by GI that the pain intensity decreased about 85,7% within one week while within 24_48 hours' time period, the pain intensity decreased about 55% showed in (Table2) while in CII the pain intensity decreased about 44,4% after 24_48 hours' time period showed in (Table3)., the maximum pain level in group (I) was sever in 3.3% of patients present in (Table2), while in group (II) the pain intensity decreased to moderate in 6.6% of patients, also in group (III) the maximum pain level, decreased to mild in 10% of the patients. During the 24-to-48-hour time interval, all patients experienced no pain or only mild pain levels. Within this time 33.3% and 10% of patients in group (I) and (II) respectively experienced still mild pain. Statistical analysis of postoperative pain (4h to 48h) between the three groups using chi-square showed significant difference ($P< 0.05$) between the three groups as present in (Table1).

Discussion

Postoperative pain is an undesirable yet tragically regular sensation after Endodontic treatment. The frequency of postoperative agony was accounted for to run from 3% to 58 %. It is normal following couple of hours or days after endodontic treatment. It is normally attributed to a tissue response caused by at least one elements, including disappointment at the cleaning and forming stages, extrusion of contaminated flotsam and damage to the periradicular tissue when foraminal development is performed ⁽²⁰⁾. Over-instrumentation might be amechanical reason, though concoction factors incorporate expulsion of intracanal dressings, filling materials or irrigants ⁽²¹⁾. The irrigation is a vital and critical advance all through each of the root canal system arrangement; however it might prompt expulsion of flooding arrangements whether manual or revolving instruments are utilized ⁽²²⁾. Accordingly, it is coherent to expect that the utilization of a nontoxic and biocompatible substance is required to stay away from or lessen postoperative discomfort. The most utilized assistant compound substances in endodontic treatment are NaOCl and CHX at various focuses .

In this investigation the patient which had irreversible pulpitis in mandibular premolar were chosen, the wave one file used to set up the canal of teeth, In two late examinations, single file reciprocation was associated with higher postoperative pain when contrasted with full-sequencerotating . In a current report, reciprocating single file system expelled less microorganisms apically than an ordinary multi file rotary system ^(23,24). In addition, different investigations demonstrated no contrasts amongst reciprocation and rotary movements with respect to debris expulsion ^(25,26). Truth be told,

the low agony rates saw in this investigation might be clarified by the taken high trans-operatory mind. Wave one instruments were utilized as a part of a moderate in-and-out pecking movement related to cautious canal disinfection and file cleaning after every three movements to avoid dentin chips aggregation. Besides, a particular irrigation system convention was performed, decreasing much more the likelihood of debris accumulation and extrusion ⁽²⁷⁾

The patient haphazardly separated in to three gatherings relies upon irrigation system arrangement utilized, in one gathering the NaOCl was utilized as irrigation protocol , and CHX, blend NaOCl& CHX were utilized as a part of other two gatherings individually. After instrumentation of root canal every one of the teeth sealed glass ionomer cement. All teeth were equivocated utilizing a sterile cotton pellet and cavitation and the occlusion was checked .

Under the state of this examination appeared there was no significant differences among the groups in 6-12h focuses time and the post-operative pain diminish inside time this identified with the achievement of endodontic treatment relies upon the annihilation of organisms (if exhibit) from the root-canal system and anticipation of reinfection. The root canal system is shaped with hand and rotary instruments to encourage powerful irrigation and filling strategy, the irrigation has a focal part in endodontic treatment amid and after instrumentation, it is encourage expulsion of microorganisms, tissue leftovers, and dentin chips from the root canal through a flushing mechanism. Irrigants can likewise help forestall pressing of the hard and delicate tissue in the apical root canal and expulsion of infected material into

the per apical, bringing about greater treatment consistency concerning here and now follow up with respect to postoperative pain^(28,29,30). This outcome couldn't help contradicting who found there were significant differences in post-operative pain at 6h time point between NaOCl & CHX irrigation system, where pain was more serious in the NaOCl group

Appeared there were significant among the groups in 24-48h, additionally there were significant differences among the groups in week time and the group III had least level of post-operative pain. This identified with there is no single irrigation solution that by itself adequately covers the greater part of the capacities required from an irrigant. Ideal irrigation depends on the joined utilization of 2 or a several irrigation solution, in a particular succession, to typically acquire the objectives of safe and effective irrigation. The vast majority of the prerequisites for a root canal irrigant is sodium hypochlorite (NaOCl)^(31,32). It has the interesting capacity to disintegrate necrotic tissue and the natural segments of the smear layer. It additionally kills sessile endodontic pathogens sorted out in a biofilm. However, in spite of the fact that sodium hypochlorite has all the earmarks of being the most alluring single endodontic irrigant, it can't break up inorganic dentin particles and in this manner can't keep the formation of a smear layer during instrumentation⁽³³⁾ in light of Many circumstances the microscopic organisms that are causing the disease are found in the dentinal tubules. The tubules are fixed by the smear layer framed during instrumentation, which adequately confines the microscopic organisms from the CHX. Consequently evacuate the smear layer utilizing 17% EDTA before utilizing

CHX. This permits the CHX to interact with the microscopic organisms on the dividers of the canals and in the dentinal tubules. Chlorhexidine is an exceptionally receptive compound and will frame encourages with both EDTA and NaOCl⁽³⁴⁾.

This examination demonstrated every one of the groups had significant differences in level of post-operative pain inside one groups in various time level, utilization of 5.25% NaOCl or 2% CHX brought about comparative levels of postoperative pain. Thusly, it might be inferred that both irrigants are adequate with respect to here and now postoperative pain amid root channel instrumentation.

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No.:1 2019

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No.:1 2019

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Table(1) pain intensity distribution at 6-12h, 24h-48h and 1weeks in three groups

%	1week Frequency	%	24_48hr Frequency	%	6_12hr Frequency	Pain intensity	Type of irrigation
85.7	6	55.6	5	33.3	3	Non	GI
14.3	1	22.2	2	33.3	3	Mild	
0	–	11.1	1	22.2	2	Moderate	
0	–	11.1	1	11.1	1	Sever	
85.7	6	44.4	4	33.3	3	Non	GII
14.3	1	22.2	2	22.2	2	Mild	
0	–	22.2	2	33.3	3	Moderate	
0	–	11.1	1	11.1	1	Sever	
100	9	87.5	7	75	6	Non	GIII
0	–	12.5	1	12.5	1	Mild	
0	–	0	–	12.5	1	Moderate	
0	–	0	–	0	–	Sever	
2.147		2.399		1.325		Chi-square	
0.049		0.047		P>0.05		P-value	
S		S		NS		Sig	

*P>0.05 Non significant

**P<0.05 Significant

Table(2) pain intensity at 6-12h, 24-48h and 1week in group I.

P-value	Chi-square	%	1week Frequency	%	24_48hr Frequency	%	6_12hr Frequency	Pain intensity	Type of irrigation
0.028 S	3.625	85.7	6	55.6	5	33.3	3	Non	GI
		14.3	1	22.2	2	33.3	3	Mild	
		0	–	11.1	1	22.2	2	Moderate	
		0	–	11.1	1	11.1	1	Sever	

*P<0.05 Significant

Table(3) pain intensity at 6-12h, 24-48h and 1week in group II

P-value	Chi-square	%	1week Frequency	%	24_48hr Frequency	%	6_12hr Frequency	Pain intensity	Type of irrigation
0.047 S	2.356	85.7	6	44.4	4	33.3	3	Non	GII
		14.3	1	22.2	2	22.2	2	Mild	
		0	–	22.2	2	33.3	3	Moderate	
		0	–	11.1	1	11.1	1	Sever	

*P<0.05 significant

Table(4) pain intensity at 6-12h,24-48h and 1week in group III

P-value	Chi-square	%	1week Frequency	%	24_48hr Frequency	%	6_12hr Frequency	Pain intensity	Type of irrigation
0.043 S	2.124	100	9	87.5	7	75	6	Non	GIII
		0	–	12.5	1	12.5	1	Mild	

No.:1 2019

		0	—	0	—	12.5	1	Moderate	
		0	—	0	—	0	—	Sever	

*P<0.05 Significant