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ORIGINAL RESEARCH

Evaluation of post operative pain with different root canal irrigants- A Comparative Study

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ABSTRACT:

Background: Root canal treatment is also known as endodontic therapy. The present study was conducted to evaluate post operative pain using different root canal irrigants. **Materials & Methods:** The present study was conducted on 40 patients. In all molars, access cavity preparation was done and the root canal shaping procedures was performed. Teeth were divided into 2 groups. In group I, 5.25% sodium hypochlorite (NaOCl) solution was used as irrigating solution. In group II, 2% Chlorhexidine gluconate (CHX) was used as irrigating solution. VAS was used to assess post-obturation pain on 1st, 4th and 8th day. **Results:** VAS was 12 in group I and 10 in group II on 1st day, 7 and 6 in group I and II respectively on 4th day and 4 and 2 on 8th day in group I and II respectively. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that 2% chlorhexidine solution as compared to 5.25% sodium hypochlorite solution. Group II showed less pain as compared to group I.

Key words: Chlorhexidine, Sodium hypochlorite, VAS,

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INTRODUCTION

Root canal treatment is also known as endodontic therapy. The principle of endodontic therapy is eradication of root canal irritants, cleaning & shaping, obturation of root canals and post-endodontic restoration. It involves access opening, cleaning the canals using various instruments along with use of irrigating solution such as sodium hypochlorite followed by obturation of prepared canals with obturating materials such as gutta percha. The successful endodontic treatment depends on factors such as proper cleaning, shaping, obturation and post obturation.¹ A number of factors reported in the related literature have been associated with the process of postoperative pain,

including the presence of preoperative pain, pulp and periapical changes as well as location and tooth type. Other factors described in the literature may also be associated with postoperative symptoms such as number of visits, original treatment or retreatment iatrogenic technical procedures associated with chemical or mechanical injuries, as well as injury caused by microorganisms and their product.²

The role of irrigating solution is vital in endodontic therapy. The most popular endodontic irrigant is 5.25% sodium hypochlorite (NaOCl), which has been used well over four decades. Although it is an effective antimicrobial agent and an excellent organic solvent, it is known to be

highly irritating to the periapical tissues, mainly at high concentrations. Other useful agent is 2% Chlorhexidine gluconate (CHX) has been suggested as an alternative irrigating solution that could replace NaOCl.³ The present study was conducted to evaluate post operative pain using different root canal irrigants.

MATERIALS & METHODS

The present study was conducted in the department of Endodontics. It comprised of 40 patients (males- 20, females- 20) having 56 mandibular teeth. All patients were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

General information such as name, age, gender etc. was recorded. In all molars, access cavity preparation was done using round diamond abrasive point and non end cutting tapered fissure bur. The root canal shaping procedures was performed according to the manufacturer’s instructions. In BMP, the canals were prepared. Teeth were divided into 2 groups. In group I, 5.25% sodium hypochlorite (NaOCl) solution was used and in group II, 2% Chlorhexidine gluconate (CHX) was used as irrigating solution. In all teeth, VAS was used to assess post-obturation pain on 1st, 4th and 8th day. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

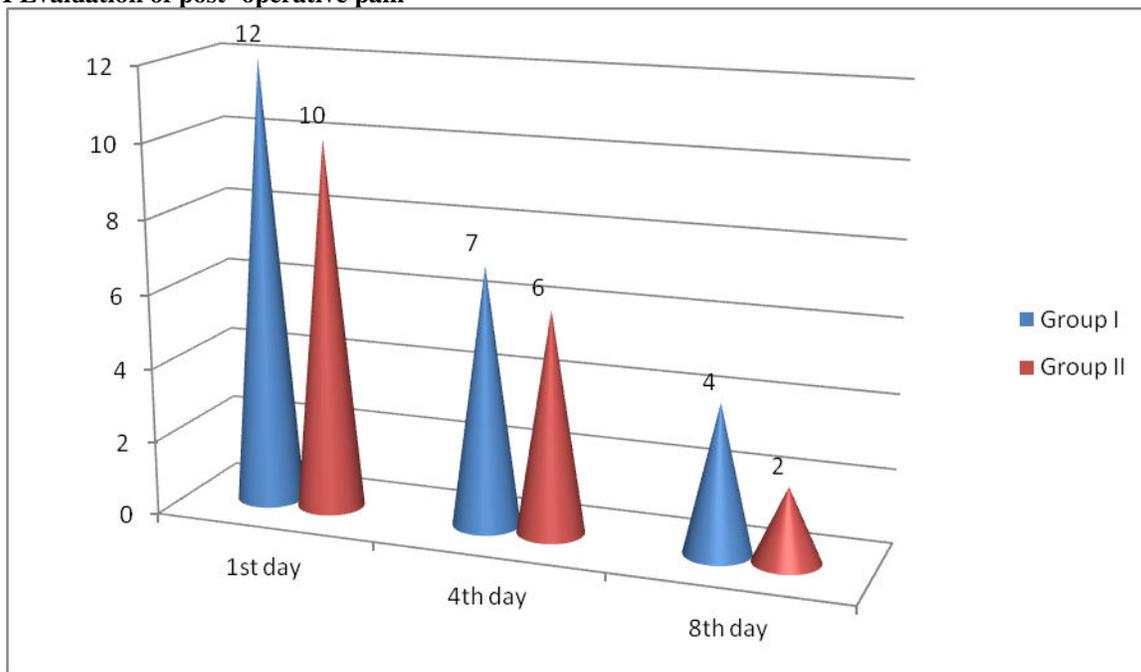
RESULTS

Table I Distribution of teeth

Teeth- 56		
Group	Group I	Group II
Irrigating solution	5.25% sodium hypochlorite (NaOCl)	2% Chlorhexidine gluconate (CHX)
Teeth	28	28

Table I shows that in group I, 5.25% sodium hypochlorite (NaOCl) solution was used as irrigating solution. In group II, 2% Chlorhexidine gluconate (CHX) was used as irrigating solution. Each group had 28 teeth each.

Graph I Evaluation of post- operative pain



Graph I shows that VAS was 12 in group I and 10 in group II on 1st day, 7 and 6 in group I and II respectively on 4th day and 4 and 2 on 8th day in group I and II respectively. The difference was significant (P< 0.05).

DISCUSSION

The root canal treatment (RCT) significantly reduces the severity of pain; the immediate post-treatment pain severity levels may sometimes slightly exceed the pretreatment severity levels. This results from penetration of pulpal tissues, dentinal debris, microorganisms and irrigants to the periapical tissues during root canal treatment leading to peri- radicular inflammation. Pain perception is subjective and varies from person to person.³ Post- obturation pain depends on factors such as infection, pre- operative pain, intracanal medication, physical and chemical damage to periapical tissues.⁴

In present study we assessed efficacy of different root canal irrigants in post operative pain. VAS was 12 in group I and 10 in group II on 1st day, 7 and 6 in group I and II respectively on 4th day and 4 and 2 on 8th day in group I and II respectively. The difference was significant ($P < 0.05$). CHX has dual action. At lower concentration, it has bacteriostatic effect and at higher concentration, it has bactericidal effect. Its optimal antimicrobial activity is at pH 5.5-7.0. It also possesses broad-spectrum antimicrobial activity. It is active against both gram-positive and gram-negative microbes. Recent literature has demonstrated there is comparable antibacterial effect with CHX and NaOCl.⁵

There are numerous factors leading to failure in endodontic therapy such as improper pulpectomy, insufficient canal preparation and apical extrusion of debris etc. Any injury to the periapical tissue during root canal treatment promotes more intensive secretion of inflammatory mediators, such as prostaglandins, serotonin, leukotrienes, histamine and bradykinin which are considered to be mediators of pain.⁶ Possible causes of persistent post-obturation pain involves inadvertently missed strands of pulp tissue, failure to adequately seal the access cavity and even non-cooperation of the patient with respect to postoperative instructions. It has been observed that bradykinin shows its sensitizing & excitatory effects on peripheral nociceptors which emphasizes its function as peripheral pain mediators. It has been shown that it mediates its effects following cascade of arachidonic acid-cyclooxygenase pathway. This reveals its presence of joint communications between the pain mediators.⁷

Zamany et al.⁸ found that a 2% CHX solution in the form of irrigant significantly reduced bacterial loads in root canals as compared to in teeth where sodium hypochlorite was used. CHX also possesses excellent retentive character in root canal dentin, tolerable odor, non- bleaching. During mechanical instrumentation, the number and virulence of the extruded microorganisms are the decisive and critical factors that determine the extent of the peri-radicular

reaction. Segura-Egea et al.⁹ confirmed that root canal treatment in teeth with irreversible pulpitis and acute apical periodontitis was significantly more painful than that in teeth with necrotic pulp and chronic apical periodontitis.

Siqueira et al.¹⁰ has drawn attention to the fact that some type of balance exists between microbial aggression and host defence in asymptomatic chronic peri-radicular lesions. In case microorganisms are extruded apically during chemo-mechanical preparation, the balance is disrupted with the peri-radicular tissues being challenged by more irritants and an acute reaction will ensue to re-establish the balance.

CONCLUSION

Authors found that 2% chlorhexidine solution as compared to 5.25% sodium hypochlorite solution. Group II showed less pain as compared to group I.

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