Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr ICV 2018= 82.06

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Comparative evaluation of efficacy of different obturation techniques in patients undergoing root canal therapy

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ABSTRACT:
Background: Success of root canal therapy is largely dependent upon the type quality with which the root canal is prepared and obturated. So, under the light of above mentioned data, the present study was undertaken for assessing the efficacy of two different obturation techniques in patients undergoing root canal therapy. **Materials & Methods:** A total of 50 consecutive patients who underwent root canal therapy in relation to mandibular first permanent molar. All the patients were broadly divided into two study groups based on the type of obturation technique used; Group A - Carrier-based obturation (CO) technique and Group B - Lateral compaction (LC) technique was used. Follow-up was done in all the patients' upto a time period of two years. Clinical and radiographic evaluation of all the patients was done for assessing the prognosis. All the results were recorded in Microsoft excel sheet. **Results:** Majority of the patients of both the study group belonged to the study group was 30 to 40 years. Non-significant results were obtained while comparing the radiographic and clinical success of the patients of both the study groups. **Conclusion:** The obturation techniques can be used with equal effectiveness among patients undergoing root canal therapy.
Key words: Obturation, Root canal therapy

Received: 13 March, 2019 Revised: 10 July 2019 Accepted: 11 July 2019

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This article may be cited as: Kapoor C, Vaidya S. Comparative evaluation of efficacy of different obturation techniques in patients undergoing root canal therapy. J Adv Med Dent Scie Res 2019;7(8): 172-175.

INTRODUCTION

Nonsurgical root canal treatment (RCT) is an important element of comprehensive dental healthcare. Previous studies have reported success rates >90% for nonsurgical RCT under controlled conditions. However, this high success rate has been reported to decrease to 40–65% in cases where RCT is performed by general practitioners.[1-3] This decrease can be attributed to the inadequacy of educational programs and lack of self-confidence in performing root canal procedures. Therefore, it is important to improve undergraduate programs, where it is possible to recognize the reasons that affect the success of dental treatments.[4, 5]

Knowing the outcome of root canal treatment (RCT) is determinant to substantiate the clinical decision making process, especially when RCT is weighed against the extraction of natural teeth or replacement by prosthetic elements. The ideal scenario in all clinical situations should combine healing/prevention of disease (apical periodontitis) and the functional retention of the tooth.[6] Success of root canal therapy are largely dependent upon the type quality with which the root canal is prepared and obturated.[7] So, under the light of above mentioned data, the present study was undertaken for assessing the efficacy of two different obturation techniques in patients undergoing root canal therapy.

MATERIALS & METHODS

The present research included assessment of efficacy of two different obturation techniques in patients undergoing root canal therapy. In the present study total 50consecutive patients who underwent root canal therapy in relation to mandibular first permanent molar. Ethical approval was obtained from the institutional ethical committee before the starting of the study and written consent was obtained after explaining in detail the entire research protocol. Complete demographic details of all the patients were obtained. Preoperative intraoral peri-

apical radiograph was obtained for confirming the extent of dental caries. Clinically, pulp vitality testing was performed in all the patients for assessing the vitality of the tooth. All the patients were broadly divided into two study groups based on the type of obturation technique used; Group A - Carrier-based obturation (CO) technique and Group B - Lateral compaction (LC) technique was used. Follow-up was done in all the patients' upto a time period of two years. Clinical and radiographic evaluation of all the patients was done for assessing the prognosis. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test and Mann-Whitney U test were used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

In the present study, a total of 50 patients were analysed. All the patients were broadly divided into two study groups; Group A and Group B. Mean age of the patients of the group A and group B was 33.8 years and 36.1 years respectively. Majority of the patients of both the study group belonged to the study group was 30 to 40 years. In the present study, non-significant results were obtained while comparing the radiographic and clinical success of the patients of both the study groups.

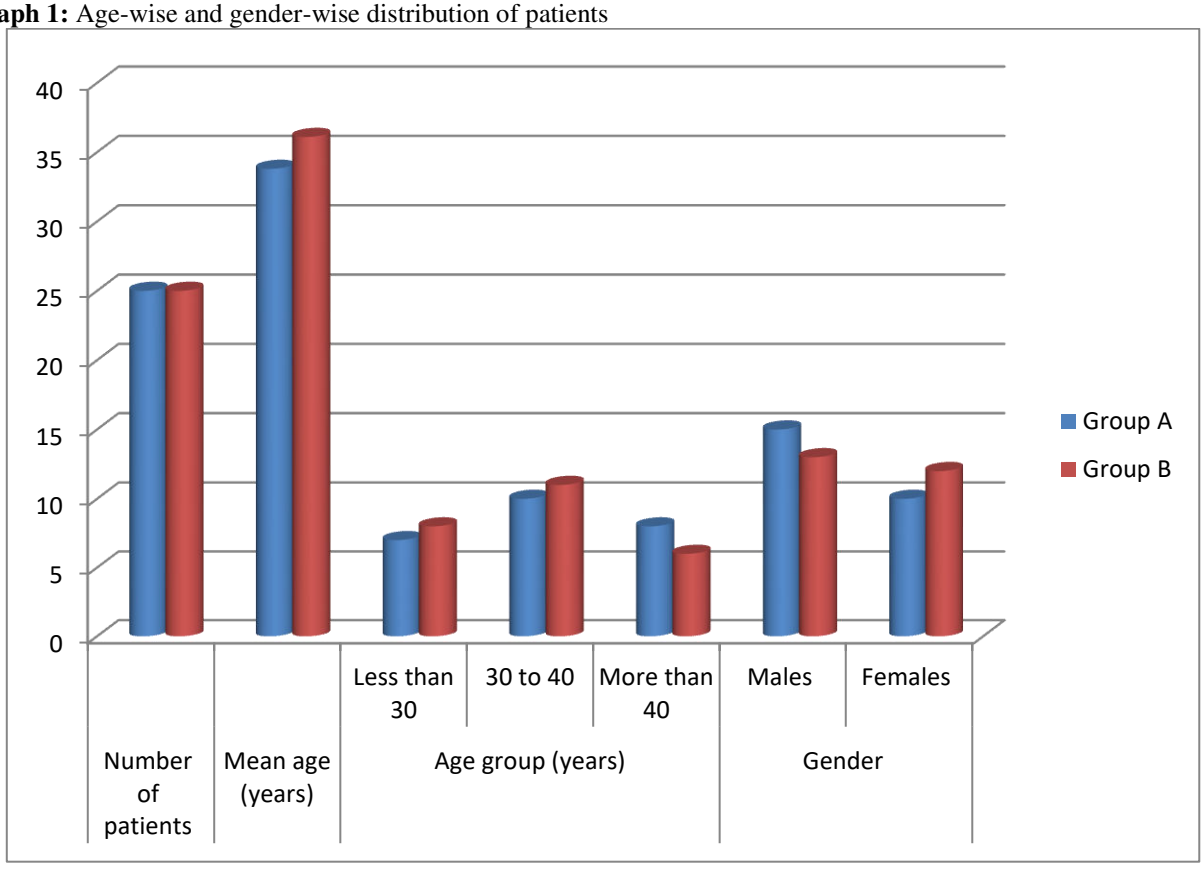
Table 1: Age-wise and gender-wise distribution of patients

Parameter		**Group A**	**Group B**
Number of patients		25	25
Mean age (years)		33.8	36.1
Age group (years)	**Less than 30**	7	8
	30 to 40	10	11
	More than 40	8	6
Gender	**Males**	15	13
	Females	10	12

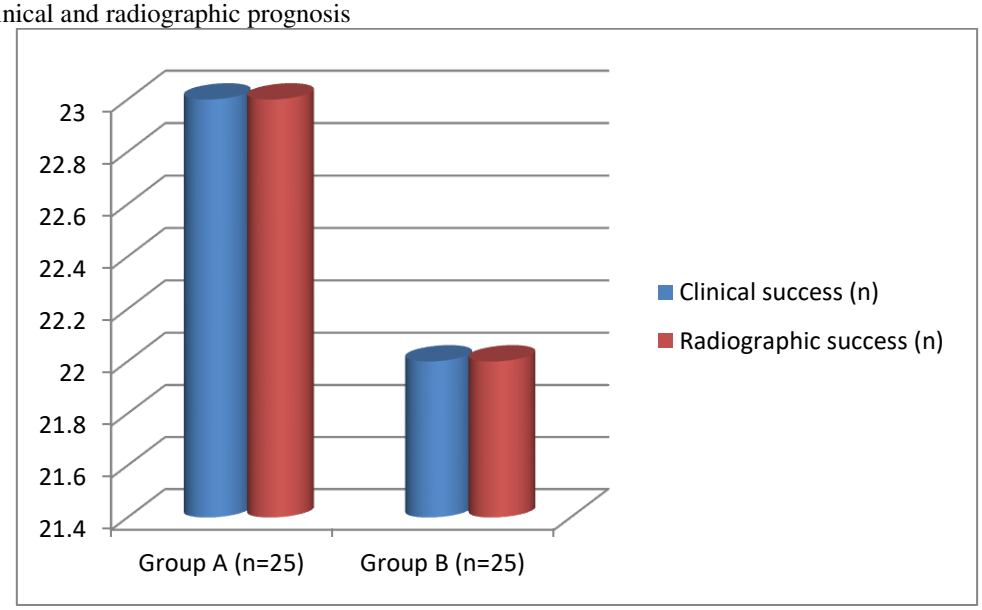
Table 2: Clinical and radiographic prognosis

Parameter	**Group A (n=25)**	**Group B (n=25)**	**p- value**
Clinical success (n)	23	22	0.15
Radiographic success (n)	23	22	0.15

Graph 1: Age-wise and gender-wise distribution of patients



Graph 2: Clinical and radiographic prognosis



DISCUSSION

Root canal treatment is a frequently performed procedure aimed to address pulpal and peri-radicular disease. It comprises a number of clinical steps regardless of the initial diagnosis. The emphasis of each step varies according to whether there is a vital pulp (non-infected) or if the pulp system contains necrotic, infected tissue and there is peri-apical pathology.The focal infection theory was prominent in the medical literature during the early 1900s and curtailed the progress of endodontics. This theory proposed that microorganisms, or their toxins, arising from a focus of circumscribed infection within a tissue could disseminate systemically, resulting in the initiation or exacerbation of systemic illness or the damage of a distant tissue site.[7- 9]

Endodontic pain management must encompass all aspects of treatment: preoperative pain control includes accurate diagnosis and anxiety reduction; intraoperative pain control revolves around effective local anaesthetic and operative techniques; and postoperative pain management can involve a variety of pharmacologic agents. However, few studies analyse the pain experienced during root canal treatment. Furthermore, as long as we know, no studies are available on the effect of root canal instrumentation and obturation techniques on the pain experienced by patients during endodontic therapy.[8, 9]So, under the light of above mentioned data, the present study was undertaken for assessing the efficacy of different obturation techniques in patients undergoing root canal therapy.

In the present study, a total of 50 patients were analysed. All the patients were broadly divided into two study groups; Group A and Group B. Mean age of the patients of the group A and group B was 33.8 years and 36.1 years respectively. Majority of the patients of both the study group belonged to the study group was 30 to 40 years. A clinical comparative analysis of two obturation techniques was done by Sarin A et al. A total of 140 patients receiving RCT at the department of Endodontic were included in the present study. The average follow-up time for the patients was 29 months (18-38 months). Patients were grouped into two depending on the type of obturating technique used.The average age of the patients undergoing obturation with carrier-based obturation (CO) technique and lateral compaction (LC) technique was 43 and 48 years respectively. While comparing failure and success of the teeth at the time of follow-up, nonsignificant results were obtained. Significant difference was seen, while comparing the presence of voids and type of teeth in which endodontic therapy was performed using different obturating techniques. Endodontic therapy done with LC obturating technique or with CO technique shows prognostic difference on the outcome or quality of treatment therapy.[10]

In the present study, non-significant results were obtained while comparing the radiographic and clinical success of the patients of both the study groups. Tamarut T et al in clinically tested the periapical healing of the method of recurrent electronic root canal measurement and the method of root canal obturation by the guttapercha-eucapercha method. During 10 years of endodontic practice of the first author, endodontic interventions were performed on approximately 4500 patients, aged 12-75 years. The success of therapy was followed-up in 257 teeth with diagnosis K04.0 to K04.5for whom a preoperative and control radiograph during the investigation period existed. Root canal preparation started with the "crown-down pressureless technique" and proceeded with the method of recurrent electronic root canal measurement. Obturation was done by the guttapercha-eucapercha method up to the apical constriction. The result of therapy success was approximately 95% overall (t-test, ANOVA); for the diagnosis: necrosis and pulp gangrene (K04.1): 64%; for the acute apical periodontitis (K04.4): 88%; for the inflamed pulp (K04.0) and pulp degeneration (K04.2) 95%; chronic apical periodontitis (K04.5): 98%, and

abnormally formed hard tissue in the pulp (K04.3):100%.[11]

CONCLUSION

From the above results, the authors conclude that both the obturation techniques can be used with equal effectiveness among patients undergoing root canal therapy.

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