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**Dr. Arunkumar Sajjanar**  
Reader, Department of  
Pedodontics and Preventive  
Dentistry, Swargiya Dadasaheb  
Kalmegh Smruti Dental College  
and Hospital, Wanadongri,  
Hingna, Nagpur, Maharashtra,  
India

**Dr. Milind Wasnik**  
Senior Lecturer, Department of  
Pedodontics and Preventive  
Dentistry, Swargiya Dadasaheb  
Kalmegh Smruti Dental College  
and Hospital, Wanadongri,  
Hingna, Nagpur, Maharashtra,  
India

**Dr. Shruti Karale**  
Senior Lecturer, Department of  
Pedodontics and Preventive  
Dentistry, Dr. R.R. Kambe  
Dental College and Hospital,  
Akola, Maharashtra, India

**Dr. Jayashree Sajjanar**  
Senior Lecturer, Department of  
Prosthodontics, Crown and  
Bridge, Swargiya Dadasaheb  
Kalmegh Smruti Dental College  
and Hospital, Wanadongri,  
Hingna, Nagpur, Maharashtra,  
India

#### Correspondence

**Dr. Arunkumar Sajjanar**  
Reader, Department of  
Pedodontics and Preventive  
Dentistry, Swargiya Dadasaheb  
Kalmegh Smruti Dental College  
and Hospital, Wanadongri,  
Hingna, Nagpur, Maharashtra,  
India

## Treatment time for pediatric Endodontic therapy with or without a magnifying loupe

**Dr. Arunkumar Sajjanar, Dr. Milind Wasnik, Dr. Shruti Karale and Dr. Jayashree Sajjanar**

### Abstract

**Introduction:-**The clinician's ability and success in performing root canal treatments on their patients is being improved by the advancements in the development of dental equipment. Recent advancement in surgical endodontics is 'Microsurgical Endodontics'. Magnification helps the clinician not only to see more, but to see well.

**Aim:** To compare treatment time for pediatric endodontic therapy with or without magnifying loops.

**Methodology:** 60 cases of deciduous molars were selected. They were categorized into two group's i.e 30 patients with use of magnifying loupe and 30 patients without use of magnifying loupe.

**Results:** A total of 60 patients aged 6 to 9 were recruited. Less time was required in treating patients using magnifying loupes than without use of loupes.

**Conclusion:** Use of magnifying loupes effectively reduced the endodontic treatment time.

**Keywords:** pediatric endodontic, primary molars, magnifying loupe

### Introduction

The clinician's ability and success in performing root canal treatments on their patients is being improved by the advancements in the development of dental equipment. Recent advancement in surgical endodontics is 'Microsurgical Endodontics' [1]. Magnification helps the clinician not only to see more, but to see well. High levels of magnification increase the comprehensive amount of visual information which will ultimately help the dentists for diagnosing and treatment of dental pathology [2]. Routine endodontic practice, confronts the dental practitioner with many challenges [3].

In 1978 the concept of extreme magnification, in the form of an operating microscope improvements in visual acuity which was made possible through the use of the operating microscope, would be helpful in endodontic treatment [4]. In 1981, the first commercially available Dental Operating Microscope (DOM) was introduced by Chayes-Virginia Inc. It was named as Denti scope. It was poorly configured and also it was difficult to use ergonomically [5].

A magnifying loupe is a piece of equipment used in dentistry which increases the efficiency and quality of dental care. The use of magnifying loupe increases visual sharpness and also the accuracy of the endodontic procedure [1]. The use of magnifying loupe results in superior visualisation of the treatment field which improves diagnostic capability [1, 6] and endodontic outcomes [7]. The use of a loupe also improves the dentist's working posture and reduces the risk of developing repetitive-stress injuries due to poor body position [8].

The magnifying loupe often enables the dentist to confirm the presence of cracks in tooth [9]. The use of a loupe also increases the efficiency of operative procedures, specifically with regard to endodontic treatment [1, 10, 11]. The pulp chamber and canals can be sclerosed particularly in teeth with large caries. In case of calcified pulp chamber, dentist can find it difficult to locate the root canals [1]. Magnifying loupe may also help the clinician to identify the root canal entrance and locate probable extra canals [7]. Hence, the use of a magnifying loupe in endodontic treatment improves clinical and radiographic outcomes [12].

In spite of the number of advantages of using a magnifying loupe in endodontic treatment, some dentists do not use it during endodontic treatment [1, 6, 8, 11]. Some of dentist believe that the use of a magnifying loupe increases the amount of time required to perform endodontic

procedures [8, 11].

Therefore, this study was conducted to compare the time it took to perform endodontic treatment in primary teeth with or without the use of a magnifying loupe.

**Aim**

To compare treatment time for pediatric endodontic therapy with or without magnifying loops

**Inclusion Criteria**

- Patients aged 6 to 9 years of age.
- Presence of acute pain.
- Patients requiring single sitting endodontic therapy for primary molar.
- **Clinically:** Multi-rooted teeth with adequate coronal structure for proper isolation, temporization, and restoration and with pulp involvement
- **Radiographic ally:** Radiolucency involving enamel, dentin and pulp in multi-rooted teeth without furcation involvement and with teeth having at least 2/3 of root length

**Exclusion Criteria**

- Patients with systemic infection
- Patients with psychological problems
- Teeth with less than half of the coronal structure remaining.
- Teeth with more than 3 canals.
- **Clinically :** Teeth with abscess /cellulites /draining sinus and Non restorable teeth
- **radiographic ally:** Teeth showing pathologic root resorption and Internal root resorption

**Methodology**

60 cases of deciduous molars were selected from the Out Patient Department of Pedodontics and Preventive Dentistry. They were categorized into two group'si.e30 patients with use of magnifying loupe and 30 patients without use of magnifying loupe.

**Armamentarium**

- Diagnostic Instruments - Mouth mirror, probe, tweezers
- Gloves and mouth mask.
- 2ml Syringe
- Rubber dam kit
- Air rotor and Burs
- Endodontic files
- Local anaesthetic solution (with adrenaline)
- Saline
- Sodium hypochlorite
- Zinc Oxide eugenol
- Glass inomer cement.

**Clinical Procedure**

A detailed case history was recorded for each patient. Complete clinical procedure was performed on 30 patients with use of magnifying loupe (Fig. 2) and 30 patients without use of magnifying loupe.

Local anesthesia was administered and the tooth to be treated was isolated under a rubber dam.(Fig. 1) The access opening was made using a round bur at high speed, deroofing was done and coronal pulp was removed. After locating the

canals, extirpation of the pulp was done. Working length was determined and Biomechanical preparation was done using stainless steel H and K – files till size 35. Irrigation was done using normal saline. After final irrigation the canals were dried with absorbent paper points and obturated with zinc oxide eugenol. The coronal space was filled with GIC cement.



**Fig 1:** Application of Rubber Dam with 75



**Fig 2:** Pulpectomy with 75 using magnifying loupe

**Results**

A total of 60 patients aged 6 to 9 were recruited. Independent variables evaluated to assess the difference in the transformed treatment time were patients' gender, quadrant and the use of a magnifying loupe (Table no.1, Table no.2, Table no.3) (Graph 1) It was noted that patients' gender was not related to the treatment time. But treating younger patients (age 6 - 7years) required more time than the elder patients. Treating upper molars required more time as compared to lower molars. Similarly less time was required in treating patients using magnifying loupes than without use of loupes.

**Table 1:** Mean time required with and without use of magnification loupes

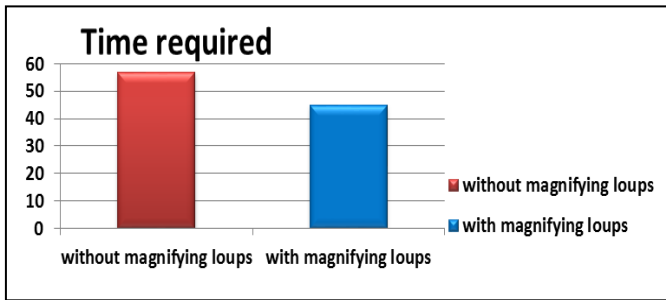
	<b>With magnification loupe</b>	<b>Without magnification loupe</b>
Mean Time required	45min	57min

**Table 2:** Mean gender distribution of participants

<b>Gender</b>	<b>Boys</b>	<b>Girls</b>
No of participants	38	22

**Table 3:** Mean quadrant wise distribution of molars

<b>Teeth</b>	<b>Upper molar</b>	<b>Lower molar</b>
Total (60)	19	41



**Graph 1:** Mean time required with and without use of magnification loupes

### Discussion

After elucidation of the results, the null hypothesis omitted. The conviction of some dentists that endodontic procedures are elongated with a magnifying loupe, is not verified.

The aim of the study was to compare treatment time for pediatric endodontic therapy with or without magnifying loupes. The results of this study presented that the time taken for performing endodontic therapy was related by means of treating the patient with upper or lower arch and the use of a magnifying loupe. It was documented that patients' gender was not related to the treatment time. But treating younger patients (age 6-7 years) required more time than the elder patients. Treating upper molars required more time as compared to lower molars. Similarly, less time was required in treating patients using magnifying loupes than without use of loupes. Similar results were found in a study by Wong *et al.*, where they compared the treatment time for non-surgical endodontic therapy with or without a magnifying loupe and concluded that the use of a magnifying loupe could significantly reduce the endodontic treatment time [13].

In this study, the use of magnifying loupes would help to reduce the time taken to accomplish non-surgical endodontic treatment. As, the operators have an improved vision field in carrying out other operative procedures than the endodontic procedures. In addition, the better vision would boost the confidence in diagnosis before initiation of the treatment. The fact that the procedures can be performed with a more accurate visual field may further improve the treatment outcome.

Clinical procedures and diagnostic competence may be better aided with magnification devices in comparison to unaided vision [1]. Dental armamentarium is continuously changing to improve the clinical outcomes in patient care. Human vision has boundaries. With the help of magnifying loupes, dentists can interpret more specifics and hence, the treatment outcome is improved. Therefore, clinicians should include magnifying devices (i.e., magnifying loupes) into daily practice to obtain better magnification [14]. Nevertheless, long-term studies to compare the outcome of endodontic treatment between using operative microscopes and magnifying loupes are still inadequate [12, 15, 16].

Mamoun reported that aided higher-magnification loupes (4×) may work better than unaided entry-level (2.5×) magnifying devices [10]. Therefore, we may consider that working efficiency is related to the power magnification.

### Conclusion

Use of magnifying loupes effectively reduced the endodontic treatment time. Therefore, it can be practiced routinely for more enhanced treatment outcomes.

### References

- Friedman M, Mora AF, Schmidt R. Microscope-assisted precision dentistry. *Compend Contin Educ Dent.* 1999; 20:728.730-721, 735-726, 737.
- Das UK, Das S. Dental Operating microscope in Endodontics-A review. *J Dent Med Sci.* 2013; 5(6):1-8.
- Clauder T. The Dental Microscope: An Indispensable Tool in Endodontic Practice. The Microscope in Dentistry, USA, Philadelphia.
- Apotheker H. A Microscope for Use in Dentistry. *J Microsurg.* 1981; 3:7.
- Gary B. Carr, Carlos A.F. Murgel-The Use of the Operating Microscope in Endodontics: *Dent Clin N Am* 2010; 54:191-214.
- Blahuta R, Stanko P. The use of optical magnifying devices in periradicular microsurgery. *Bratislav Lek Listy.* 2012; 113:311-3.
- Eskandarinezhad M, Ghasemi N. Nonsurgical endodontic retreatment of maxillary second molar with two palatal root canals: a case report. *J Dent Res Dent Clin Dent Prospects.* 2012; 6:75-8.
- Forgie AH, Pine CM, Longbottom C, Pitts NB. The use of magnification in general dental practice in Scotland—a survey report. *J Dent.* 1999; 27:497-502.
- Slaton CC, Loushine RJ, Weller RN, Parker MH, Kimbrough WF, Pashley DH. Identification of resected root-end dentinal cracks: a comparative study of visual magnification. *J Endod.* 2003; 29:519-22.
- Mamoun JS. A rationale for the use of high-powered magnification or microscopes in general dentistry. *Gen Dent.* 2009; 57:18-26. Quiz 27–18, 95–16.
- Arens DE. Introduction to magnification in endodontics. *J Esthet Restor Dent.* 2003; 15:426-39.
- Del Fabbro M, Taschieri S, Lodi G, Banfi G, Weinstein RL. Magnification devices for endodontic therapy. *Cochrane Database Syst Rev.* 2009; 3:CD005969. doi: 10.1002/14651858.CD005969.pub2.
- Amy Wai-yee Wong, Xiaofei Zhu, Shinan Zhang, Samantha Ka-yan Li, Chengfei Zhang, Chun-Hung Chu. Treatment time for non-surgical endodontic therapy with or without a magnifying loupe. *BMC Oral Health* 2015; 15(40):1-6.
- Garcia A. Dental magnification: a clear view of the present and a close-up view of the future. *Compend Contin Educ Dent.* 2005; 26:459-63.
- Taschieri S, Del Fabbro M, Weinstein T, Rosen E, Tsesis I. Magnification in modern endodontic practice. *Refuat Hapeh Vehashinayim.* 2010; 27:18-22, 61.
- Tsesis I, Rosen E, Taschieri S, Telishevsky Strauss Y, Ceresoli V, Del Fabbro M. Outcomes of surgical endodontic treatment performed by a modern technique: an updated meta-analysis of the literature. *J Endod.* 2013; 39:332-9.