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Original Research Article.

Assessment of Clinical Outcomes of Primary Molars Treated By Different Types of Pulpotomy

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ABSTRACT

Background: Dental caries is an infective, chronic, degenerative and multifactorial condition that represents the most prevalent chronic disease worldwide, mainly in children. Pulpotomy is the amputation of coronally infected pulp tissue to maintain the vitality and function of the radicular pulp. Hence, the present study was undertaken for assessing clinical outcomes of primary molars treated by different types of pulpotomy.

Materials & Methods: A total of 90 patients within the age group of less than 15 years were enrolled. All the Pulpotomy procedures were performed under local anesthesia. The treated tooth was isolated with a rubber dam and the pulp chamber was accessed. The coronal pulp tissue was removed using a high-speed handpiece. Initial hemorrhage control was achieved by sterilized dry cotton pellets under slight pressure. Three techniques were used for achieving final haemostasis: Diode laser, 6% NaOCl and Sterilized dry cotton pellet compression. Clinical and radiographic success was recorded at two-year follow-up. All the results were analysed by SPSS software.

Results: Among the patients in which diode laser was used, clinical success was seen in 100 percent of the patients while radiographic success was seen in 90 percent of the patients. Among the patients in which 6 percent sodium hypochlorite was used, clinical success was seen in 83.33 percent of the patients while radiographic success was seen in 53.33 percent of the patients. Among the patients in whom no medication was given, clinical success was seen in 100 percent of the patients while radiographic success was seen in 83.33 percent of the patients. Significant results were obtained while comparing the radiographic success among the three study groups.

Conclusion: Pulpotomy in which Diode laser was used depicted 100 percent success rate.

Key words: Pulpotomy, Primary Molar.

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INTRODUCTION

Dental caries is an infective, chronic, degenerative and multifactorial condition that represents the most prevalent chronic disease worldwide, mainly in children. Tooth decay would seem to be one of the major public health problems related not only to primary teeth but also to permanent ones, and, despite the preventive strategies mostly adopted in developed countries, 2.4 billion adults and 486 million children are affected by dental decay in the permanent and deciduous dentition, respectively.[1-3]

Pulpotomy is the amputation of coronally infected pulp tissue to maintain the vitality and function of the radicular pulp. The main goal of this therapy is to sustain carious primary teeth survival until natural exfoliation. There are several techniques for pulpotomy with different protocols including nonpharmacotherapeutic options such as electrosurgery and laser ablation. Pharmacotherapeutic approaches involve dressing the pulp tissue with formocresol, gultaraldehyde, ferric sulfate, calcium hydroxide, mineral trioxide aggregate (MTA), freeze-dried bone, or sodium hypochlorite (NaOCl).[4-6] Hence; the present study was undertaken for assessing clinical outcomes of primary molars treated by different types of pulpotomy.

MATERIALS & METHODS

The present study was undertaken with the aim of assessing the clinical outcome of primary molars treated by different types of

pulpotomy. A total of 90 patients within the age group of less than 15 years were enrolled. Only those patients were enrolled which had negative sign of presence of any sign of pathologic or external/internal resorption. Patients with presence of carious deciduous first molar were enrolled. All the Pulpotomy procedures were performed under local anesthesia. The treated tooth was isolated with a rubber dam and the pulp chamber was accessed. The coronal pulp tissue was removed using a high-speed handpiece. Initial hemorrhage control was achieved by sterilized dry cotton pellets under slight pressure. Three techniques were used for achieving final haemostasis:

- Diode laser
- 6% NaOCl
- Sterilized dry cotton pellet compression.

Clinical and radiographic success was recorded at two-year follow-up. All the results were analysed by SPSS software.

Table 1: Clinical success rate on 2 years follow-up

Treatment	Success		Failure	
	Number of patients	Percentage	Number of patients	Percentage
Diode laser	30	100	0	0
6% Sodium hypochlorite	25	83.33	5	16.67
No medication	30	100	0	0
p- value	0.08 (Non-Significant)			

Table 2: Radiographic success rate on 2 years follow-up

Treatment	Success		Failure	
	Number of patients	Percentage	Number of patients	Percentage
Diode laser	27	90	3	10
6% Sodium hypochlorite	16	53.33	14	46.67
No medication	25	83.33	5	16.67
p- value	0.01 (Significant)			

RESULTS

Among the patients in which diode laser was used, clinical success was seen in 100 percent of the patients while radiographic success was seen in 90 percent of the patients. Among the patients in which 6 percent sodium hypochlorite was used, clinical success was seen in 83.33 percent of the patients while radiographic success was seen in 53.33 percent of the patients. Among the patients in whom no medication was given, clinical success was seen in 100 percent of the patients while radiographic success was seen in 83.33 percent of the patients. Significant results were obtained while comparing the radiographic success among the three study groups.

DISCUSSION

More recently, bioactive endodontic cements have been introduced as valid alternatives to MTA in VPT, showing promising clinical results. In addition, calcium-silicate-based cement demonstrates no difference when compared to MTA in the pulpotomies of primary teeth; however, further long-term studies with larger sample sizes are needed to confirm these preliminary outcomes.[6- 10] Hence; the present study was undertaken for assessing clinical outcomes of primary molars treated by different types of pulpotomy.

In the present study, Among the patients in which diode laser was used, clinical success was seen in 100 percent of the patients while radiographic success was seen in 90 percent of the patients. Among the patients in which 6 percent sodium hypochlorite was used, clinical success was seen in 83.33 percent of the patients while radiographic success was seen in 53.33 percent of the patients. Kuo HY et al assessed the clinical and radiographic success rates of primary molars treated by pulpotomy using diode laser, sodium hypochlorite, or no medication after a follow-up period of 24 months. A retrospective study was conducted by evaluating the success rates of primary molars treated by pulpotomy with diode laser, sodium hypochlorite, or no medication according to the clinical symptoms and signs and radiographic features. There were 145 primary molars included in the study. No significant differences in clinical and radiographic success rates were found among primary molars treated by pulpotomy using diode laser, sodium hypochlorite, or no medication, when the teeth were treated by experienced pedodontists and restored with stainless steel crowns. The 2-year clinical success rates for primary molars treated by pulpotomy using diode laser, sodium hypochlorite, or no medication were all 100%. The 2-year radiographic success rates were 90.9%, 100%, and 87.5% for primary molars treated by pulpotomy using diode laser, sodium hypochlorite, or no medication, respectively. However, when the pulpotomy for primary molars was performed by less-experienced residents, a reduced overall success rate from 94% for attending doctors to 58% for residents was found. Operators and final restorations are confounding factors for determining the success rate of primary molars treated by pulpotomy.[10]

In the present study, among the patients in whom no medication was given, clinical success was seen in 100 percent of the patients while radiographic success was seen in 83.33 percent of the patients. Significant results were obtained while comparing the radiographic success among the three study groups. Shabzendedar M et al evaluated the effects of 3 percent sodium hypochlorite (NaOCl) and formocresol (FC) as pulp dressing agents in pulpotomized primary molars. One hundred children between three and six years each with at least one primary

mandibular second molar requiring pulpotomy were randomly allocated to two groups (of 50 each). All the teeth received stainless steel crown after conventional pulpotomy procedure with either NaOCl (applied for 15 second) or FC (applied for one minute). Clinical and radiographic signs/symptoms were blindly recorded at zero, six. and 12 months. The differences were statistically analyzed using the Fisher's exact test. At six months, 100 percent clinical success was found with both NaOCl, and FC. Radiographic success rates for NaOCl were 98 percent and 92 percent at 6- and 12-month recalls respectively. FC group showed 94 percent and 93 percent radiographic success rates at the same periods respectively. There was no statistically significant difference between the groups. NaOCl can be suggested as a pulpotomy agent for primary teeth pulpotomies. However further clinical studies with long-term follow-ups are needed to test the efficacy of NaOCl as a pulpotomy medicament in primary teeth.[11]

CONCLUSION

Pulpotomy in which Diode laser was used depicted 100 percent success rate.

REFERENCES

1. Partovi F, Izatt JA, Cothren RM, et al. A model for thermal ablation of biological tissue using laser radiation. Lasers Surg Med 1987;7(2): 141–54.
2. Nazemisalman B, Farsadeghi M, Sokhansanj M. Types of lasers and their applications in pediatric dentistry. J Lasers Med Sci 2015;6(3): 96–101.
3. Gupta G, Rana V, Srivastava N, et al. Laser pulpotomy-an effective alternative to conventional techniques: a 12 months clinicoradiographic study. Int J Clin Pediatr Dent 2015;8(1):18–21.
4. Hui-Derksen EK, Chen CF, Majewski R, et al. Retrospective record review: reinforced zinc oxide-eugenol pulpotomy: a retrospective study. Pediatr Dent 2013;35(1):43–6.
5. Randall RC. Preformed metal crowns for primary and permanent molar teeth: review of the literature. Pediatr Dent 2002;24(5): 489–500.
6. Roberts JF, Sherriff M. The fate and survival of amalgam and preformed crown molar restorations placed in a specialist paediatric dental practice. Br Dent J 1990;169(8):237–44.
7. Garcia-Godoy FR, Novakovic DP, Carvajal IN. Pulpal response to different application times of formocresol. J Pedod 1982;6(2): 176–93.
8. Kurji ZA, Sigal MJ, Andrews P, et al. A retrospective study of a modified 1-minute formocresol pulpotomy technique part 1: clinical and radiographic findings. Pediatr Dent 2011;33(2):131–8.
9. Erdem AP, Guven Y, Balli B, et al. Success rates of mineral trioxide aggregate, ferric sulfate, and formocresol pulpotomies: a 24-month study. Pediatr Dent 2011;33(2):165–70.
10. Kuo HY, Lin JR. Clinical outcomes for primary molars treated by different types of pulpotomy: A retrospective cohort study. J Formos Med Assoc. 2018 Jan;117(1):24-33.
11. Shabzendedar M, Mazhari F. Sodium hypochlorite vs formocresol as pulpotomy medicaments in primary molars: 1-year follow-up. Pediatr Dent. Jul-Aug 2013;35(4):329-32.

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