

Pulpotomy in primary molar: A conservative and minimally invasive approach

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ABSTRACT

The primary objective of vital pulp therapy is to maintain the health and integrity of natural tooth and its periodontium so that the tooth sustains in the dentition and maintains arch length. This case report describes the management of primary molar with pulpotomy to maintain it in a healthy state till its exfoliation and eruption of the succedaneous tooth. The aim of this case is to highlight and promote vital pulp treatment in primary teeth.

Keywords: Pulpotomy, periodontium, exfoliation, coronal pulp.

INTRODUCTION

Pediatric dentist often encounters clinical situations requiring preservation of primary teeth in a way to maintain its health in a conservative manner. Vital pulpotomy is the preferred treatment of choice for management of pulp exposure in primary teeth. Pulpotomy can be defined as the surgical removal or amputation of the coronal pulp of the vital tooth followed by the placement of a particular medicament over the intact stump to fix, mummify or stimulate repair of the remaining radicular pulp.¹

Preservation of primary teeth until the exfoliation stage and the eruption of succedaneous teeth are desirable. Deciduous dentition helps to maintain the space between teeth, determine the shape and future development of dental arches, prevent detrimental habits. These teeth also help in speech and functions like chewing as well as preserve aesthetics. A variety of treatment options have been suggested for the management of primary teeth where pulp has been exposed by caries or through mechanical procedures.² The possible choices for conservative pulp therapy include direct pulp capping, pulpotomy or pulpectomy. Pulpotomy is indicated when caries removal results in pulp exposure in a primary tooth with a normal pulp or reversible pulpitis or after a traumatic pulp exposure.³ It is performed when inflammation is confined to coronal pulp whereas, root pulp remains vital.⁴

This article discusses a case report addressing the management and preservation of primary molar with pulpotomy being employed as therapeutic technique.

CASE REPORT

An 8-year old male patient accompanied by his parents reported to the Department of Pediatric & Preventive Dentistry, PGIDS, Rohtak (Haryana), with the chief complaint of slight pain on chewing since 1 week in lower right back tooth. Clinical examination illustrated extensive deep caries in the mandibular right deciduous molar. The tooth was sensitive to cold. Sinus tract or swelling was not evident. Radiological examination revealed that the tooth has intact and healthy periodontium [Figure 1]. The case was diagnosed to be of acute reversible pulpitis due to caries. Pulpotomy on mandibular right 2nd primary molar was planned as therapeutic procedure.

The child's parents were informed about the treatment plan, its advantage and shortcomings, other treatment alternatives and consequences if treatment was avoided. After proper isolation of teeth under rubber dam and with the use of saliva ejector, inferior alveolar nerve block (2% lidocaine) as local anesthesia was administered for effective pain control. Firstly, caries was removed and the pulp chamber was accessed with No 330 bur using high speed hand piece with water spray. Following this, coronal pulp was removed with a sterile spoon excavator and pulp chamber was rinsed with normal saline. Then, a slightly moistened sterile cotton pellet soaked in saline solution was applied with pressure for 2-3 minutes and haemostasis was obtained [Figure 2]. Mineral Trioxide Aggregate (MTA) as pulpotomy medicament was placed and gently packed over the amputated pulp orifices. MTA was then packed to a thickness of 1.5 – 2 mm in the access cavity with moistened cotton pellet placed over it and sealed with temporary restorative material. Patient was recalled after 72 hours and then glass ionomer cement (Ketac Molar, 3M, ESPE, Minnesota,

USA) was placed as base material over MTA followed by composite restoration. Post operative radiograph was taken [Figure 3]. Patient was recalled after 1 month and later at every 3 months. After 1 year tooth was found to be functional with no signs and symptoms both clinically and radiologically and physiological root resorption was found to be proceeding normally [Figure 5].

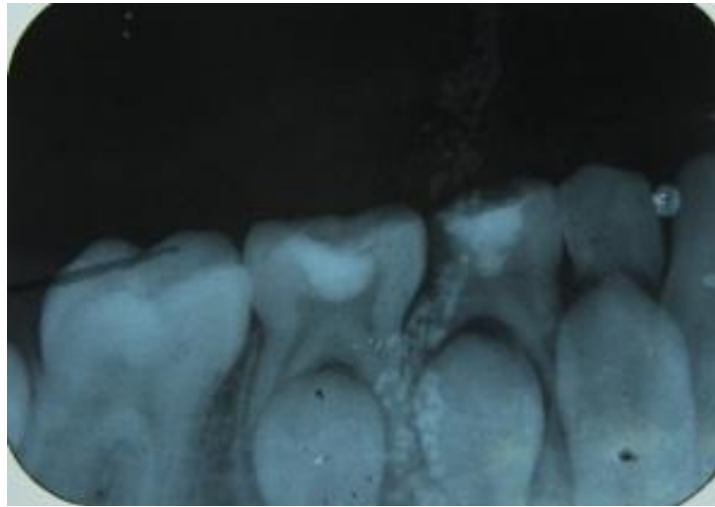


Fig. 1: Pre-operative



Fig. 2: After haemostasis

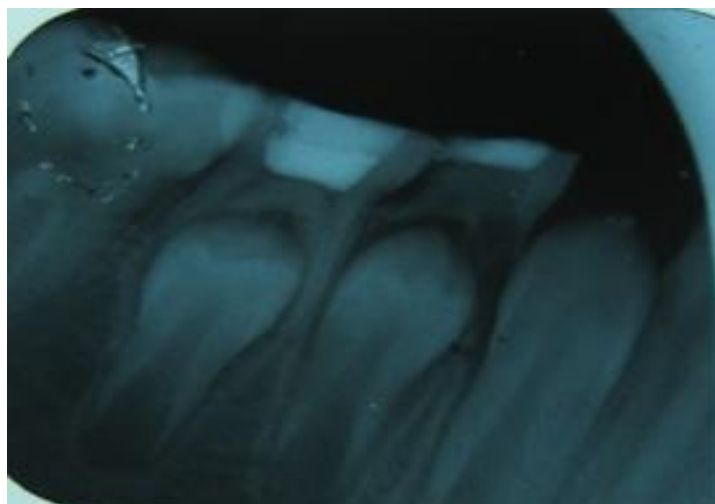


Fig. 3: Post-operative

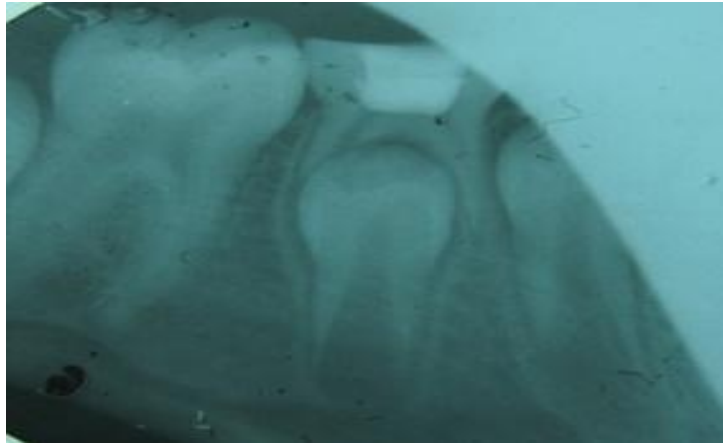


Fig. 4: 6 month Follow Up



Fig. 5: 12 month Follow Up

DISCUSSION

Pulp therapy was first described in 1756 by Philip Pfaff.⁵ Pulpotomy basically consists of removal of the coronal pulp and fixing the radicular pulp with a medicament. It is the most widely accepted vital pulp therapeutic technique for treating primary teeth with coronal pulp inflammation caused by caries or mechanical exposure of pulp with no involvement of the radicular pulp. Various medicaments have been suggested for pulp dressings in pulp therapy.

In 1899, Gysi's triopaste was introduced as the first compound to combine formaldehyde and creosote to fix pulp under sterile conditions.⁶ In 1923, Sweet suggested formocresol for vital pulp therapy of primary teeth.⁷ Since then, various materials have been prescribed as pulpotomy medicaments like ferric sulfate, glutaraldehyde, calcium hydroxide, glass ionomer cement, mineral trioxide aggregate and biodentine. Formaldehyde has been described as the gold standard of pulp therapy in the past. However, there have been significant concerns for the past 25 years surrounding the use of formocresol as a pulpotomy medicament due to carcinogenic and toxic potential of formaldehyde.⁸

MTA was introduced by Torabinejad et al in 1995.⁹ Farsi et al concluded in his study that primary molars treated with MTA as pulpotomy medicament demonstrated superior success.¹⁰ Several studies have demonstrated the clinical and radiographic success rate for MTA as pulpotomy medicament in primary teeth within a range of 88-100%.¹¹ MTA has been documented extensively and is a viable option for a biocompatible material for pulp therapy.

CONCLUSION

Vital pulpotomy serves to be a viable treatment modality for conservative management of primary molars with exposed pulp. Among the wide array of pulpotomy medicaments, MTA is a clinically practical material for vital pulp therapy in primary molars.

CONFLICT OF INTERESTS:

The author declares no conflict of interests.

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