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CASE REPORT

A Single Visit Pulpectomy using Sx Rotary ProTaper File

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ABSTRACT

Single visit vital pulp therapy using rotary endodontic systems could be definitely the future for pediatric dentistry. Thus, this case presents the clinical sequence of single visit pulpectomy using Sx Rotary ProTaper file in primary molar.

Keywords: Pulpectomy, Pediatric endodontic, Pulp therapy, Single visit endodontics, Rotary ProTaper.

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INTRODUCTION

Pulp therapy in pediatric patients proves to be extremely challenging and in standard dental setup should be simple, predictable and time saving. Pulpectomy is the preferred management modality for advanced carious progression and intraradicular infection. The execution of pulpectomy is more difficult in primary molars for their unique anatomical variance than permanent teeth. The canals are often thin, ribbon like or 'c' shaped and narrow. Since, loss of primary molars is a threat to the occlusion and poses difficulty in space management, single visit pulp therapy could be definitely an important avenue in pediatric dentistry.

CASE REROrT

A 5-year-old, female patient (Fig. 1) reported to the Department of Pedodontics and Preventive Dentistry, MA Rangoonwala College of Dental Sciences and Research Centre, Pune, with a chief complaint of stimulated pain in lower left back tooth. Patient's medical history was noncontributory. It was observed that 75 was affected by dental caries (Fig. 2) with intraoral periapical radiographs (Fig. 3) revealing pulp involvement.

Local anesthesia was administered using 2% lidocaine and 1:200,000 epinephrine (AstraZeneca, Bangalore, India). Following isolation with rubber dam (Coltene/Whaledent, USA), access cavity was prepared (Figs 4 and 5) using a diamond fissure bur 012 (Mani, Japan). Working length was determined radiographically (Fig. 6). Instrumentation of the canals was performed by Sx rotary ProTaper using the crown down technique (Figs 7 and 8). Copious irrigation using

Fig. 1: Extraoral photograph

Fig. 2: Preoperative

Fig. 3: Preoperative radiograph

Fig. 4: Access opening—distal view

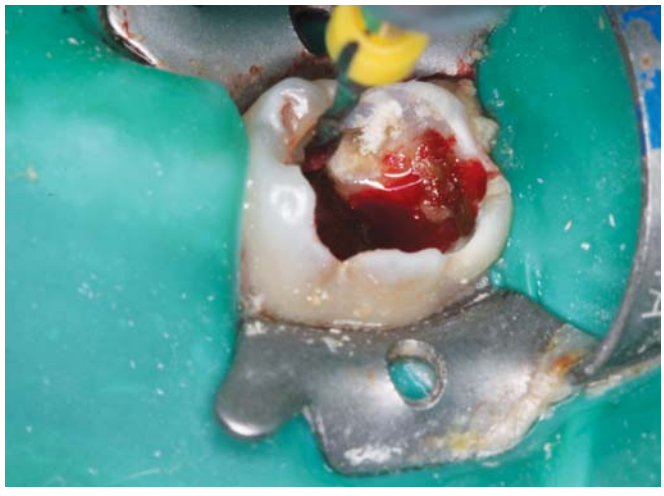

Fig. 7: Cleaning and shaping with Sx rotary ProTaper

Fig. 5: Access opening—mesial view

Fig. 8: Photographic representation—postcleaning and shaping

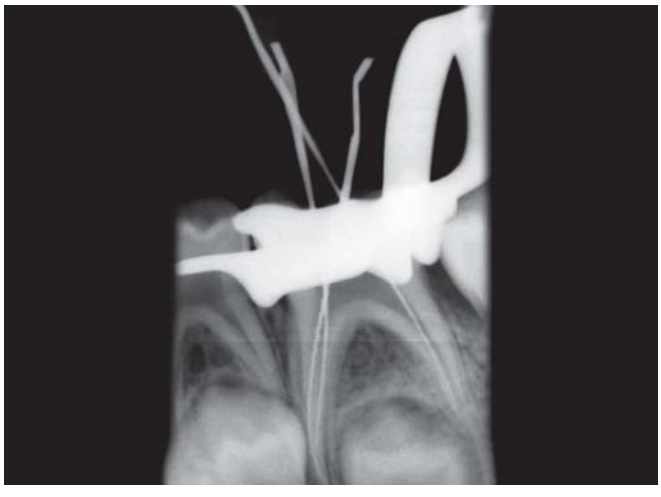

Fig. 6: Working length determination by radiographic method

Fig. 9: Obturation with ZOE

5.25% NaOCl solution (Hyposet, UPS Hygienes, Mumbai) and normal saline (Fresenius Kabi, AG, Germany) was carried out. The canals were dried using paper points (Ammdent, Mohali) and obturated (Fig. 9) by using Unidirectional Lentulospiral (Mani, Japan) and Zinc Oxide Eugenol [(ZOE) Prime Dental Products Pvt. Ltd., Thane; Fig. 10]. Access cavities were further sealed using glass ionomer cement (GC Fuji 2, USA; Fig. 11).

Fig. 10: Radiographic representation—postobturation restoration

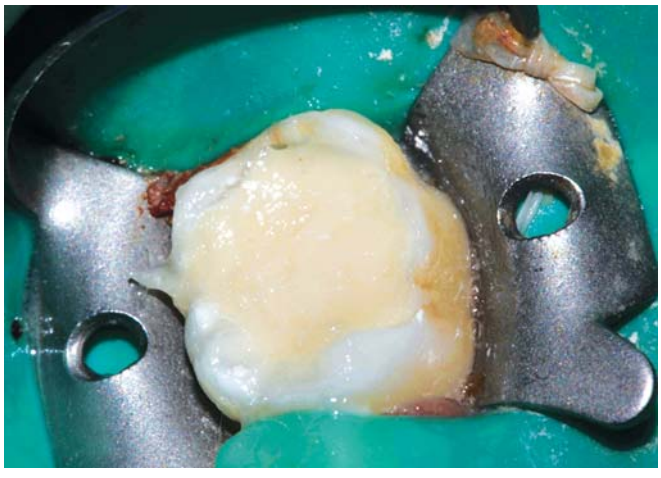

Fig. 11: Postobturation restoration

DISCUSSION

The management of direct pulp exposure by caries or other injuries has been challenging and various methods like pulp capping, pulpotomy, pulpectomy, apexogenesis, apexification followed by root filling have been used. Proponents of pulp capping prefer the procedure as it is less invasive, less tissue destructive and easier to carry out thus saving time, effort and money. The mechanism of lesion development and pulp breakdown may be an important reason why pulps shows a declining rate of survival over-time following capping as compared to pulpotomy.[1] Predictability of successful pulp capping is inferior to long-term success rate of endodontic therapy. Moreover, the repair phenomenon developing in the pulp may result in the narrowing of the pulpal space making endodontic treatment difficult.[2] Between these two points of view are those who consider pulp capping appropriate only for exposures in healthy pulps after accidental trauma or those displaying signs of minimal pulpitis. In case of caries penetration, the tissue may be more or less inflamed, depending on the extent of the bacterial invasion.[3] There are no reliable methods to assess the extent of inflammation and identify a cutoff point between a reversible or irreversible inflammatory pulpal condition. Spontaneous pain episodes of a lingering character, combined with prolonged sensitivity, appear to be the best clinical predictors, currently available to suggest an impaired prognosis for pulp capping, which proves to be nonreliable in case of pediatric patients.[4] Traditionally, pulpectomy has been scheduled into two or more appointments to disinfect the canal, improve patient comfort and observe healing before filling. However, one-visit endodontic treatment is faster, more convenient and prevents the recontamination of root canals between appointments. Most pulpal, dentoalveolar periradicular pathologies are inflammatory following infection. Regardless of the instruments and file sizes employed microorganisms are rarely eliminated completely from the root canals. Remaining pathogens may jeopardize the outcome of the pulp therapy.[5] Irrigation with sodium hypochlorite was found to be significantly more effective than saline in rendering canals free of bacteria.[6] It has been reported that the mechanical action of instrumentation and irrigation significantly reduced the number of bacterial cells in the root canal irrespective of the technique.[7] Nickel titanium (NiTi) files were five times more likely to achieve success than stainless steel files because they maintain the original canal shape during instrumentation in permanent teeth, but no such studies till date published confirm similar findings.[8] NiTi rotary instruments can predictably enlarge root canals while maintaining the original path, to sizes not routinely available with stainless steel files. Since, larger preparations remove more bacterial cells, a higher rate of treatment success rate is expected. However, the treatment of necrotic pulps in one session is a controversial issue. There are many inclusion criteria for selection of cases.[9] It is suggested that decisions regarding single or multiple visit treatment options should be based solely on the diagnosis and not the time available for treatment. Studies have found no difference in the incidence of postoperative pain between single and multiple visit endodontics[10] whereas fewer failures were noted in the two visit treatment group than in the one visit treatment group.[11] Inability to dry canals completely, insufficient time for the procedure, long appointment induced stress on patient, the operator skill, root canal anatomy and instrument availability should also be considered while deciding upon single visit treatment. In a vital pulp, the infection is superficial; therefore, pulp extirpation and obturation are best completed in a single visit treatment. Flare-up induced by the leakage of the temporary seal is reduced and the teeth are ready sooner for final restoration diminishing a

risk of a fracture. Completing pulp treatment in one appointment is an effective and time saving procedure in indicated cases.

CONCLUSION

The results of this case report demonstrated successful response to single visit pulpectomy using single file Protaper system. In general, the successful results of this case indicate that single visit pulpectomy using adequate chemo-mechanical preparation—a combination of single file Sx ProTaper and 5.25% NaOCl irrigation can prove to be a satisfactory treatment modality minimizing the requirement for patient reappointment and therapeutic duration. Although further studies with larger samples are required to confirm the findings demonstrated by this report.

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