



MANAGEMENT OF ROOT FRACTURE IN PRIMARY TEETH WITH ESTHETIC REHABILITATION- A CASE REPORT

Dr. Aparna Chaurasiya*

Post Graduate Student, Department of Pediatric & Preventive Dentistry, KD Dental College and Hospital, Mathura, U.P., India. *Corresponding Author

Dr. Sonal Gupta

Professor & Head, Department of Pediatric & Preventive Dentistry, KD Dental College and Hospital, Mathura, U.P., India.

ABSTRACT Dental traumatic injuries are very common in younger children. Root fractures are very rarely seen among all the dental traumatic injuries in primary dentition. The loss of anterior teeth can be psychologically and socially harmful to the children, the trauma of which can be minimized by immediate replacement of teeth, preferably using fixed prostheses. This case highlights the conservative management of root fracture in primary central incisor and the technique to use extracted natural tooth as pontic bonded to adjacent teeth with fiber reinforced resin. Patient was asymptomatic and root showed normal physiologic resorption during 1 year follow-up.

KEYWORDS : Root Fracture, Physiologic Resorption, Primary Teeth

INTRODUCTION

Trauma to the teeth and orofacial region is most commonly encountered in children compared to adults¹. Radicular fracture involves dentin, cementum and pulp that may be present either in the radicular apparatus only or involves coronal portion of the tooth (crown root fracture)².

In the permanent dentition, 0.5–7 % of the dental traumatic injuries were reported as root fractures and in primary dentition, 2–4 root fractures were reported³. The peak frequency of root fractures in primary dentition occurs at 3–4 years of age⁴.

Management of root fracture depends on various factors like the time for the exfoliation of the primary tooth, child's capability to manage with the emergency situation and occlusion of the dentition⁵. The loss of anterior teeth can be psychologically and socially unacceptable to the children, the trauma of which can be minimized by immediate replacement of teeth, readily using fixed prosthesis⁶.

This case report describes the conservative operation of root fracture in primary central incisor and the use extracted natural deciduous tooth as pontic for a fiber reinforced composite resin Fixed partial denture.

CASE REPORT

A 4-year-old boy reported to the Department of Pediatric and Preventive Dentistry with the history of trauma in his upper front region of the jaw. He had a fall on the school ground while playing 2 days back.

On extraoral examination no gross facial asymmetry was reported. He'd no abrasions on the upper or lower lip.

Intra oral examination revealed intrusive luxation of 51 by 1 mm compared to the left maxillary central incisor (Fig. 1) and grade III mobility in right primary central incisor. Radiographic examination revealed a radiolucent line in the middle third of right maxillary central incisor and permanent tooth bud was in Nolla's stage 5 (crown almost completed) (Fig. 2). Based on the radiographic and clinical findings, diagnosis of horizontal root fracture in right maxillary primary central incisor and chronic irreversible pulpitis in left maxillary primary central incisor.



Figure 1:- Preoperative Condition

Pulpectomy was performed in left maxillary primary central incisor, 61 and extraction of 51 was done. Because of the parent's concern about the loss of the primary incisor at an early age, it was decided to produce a fixed partial denture reinforced with fiber reinforced composite using the natural teeth as a pontic after the extraction of the offending tooth. The fractured tooth fragment was carefully removed under local anesthesia. The adaption of the fragment was checked. The pulp chamber was cleaned and filled with composite resin. A 2 mm wide horizontal groove was made on the lingual aspect of the primary left central and right lateral incisors. Following completion of etching and bonding procedures, a thin layer of flowable composite resin was applied (without curing) to the lingual groove and interproximal surface of the abutment tooth, with a length of 2 mm wide composite reinforced fibre (Interlig, Angelus) was placed on the surface of the teeth, and slight pressure was applied with a hand instrument to produce close contact at the interproximal area. The excess resin composite was removed, and the fibre was light-cured for 20 s. The surface of the pontic was also prepared for bonding. A thin layer of flowable composite was applied to the natural tooth pontic, which was placed in the desired position on the interlig fibre and cured for 20 s (Fig. 3). The patient's occlusion was checked for premature contacts, and the resin composite was polished using a polishing disc. Radiographic evaluated after 1 year showed resorption of intra alveolar apical fragment (Fig. 4).



Figure 2:- IOPAR of 51, 61 showing root fracture



Figure 3:- Natural teeth pontics bonded to "Interlig."



Figure 4:- IOPAR Showing Physiologic Root Resorption Of 51, After 12 Months Of Follow Up

DISCUSSION

The root fracture is a rare injury in the primary and permanent dentition among the dental traumatic injuries. In the primary dentition, root fracture isn't a common phenomena and most constantly occurs at the age of 3 – 4 years when the physiologic root resorption has begun, thereby weakening the root and also the resiliency of the surrounding bone makes the primary teeth more vulnerable to displacement injuries⁵. The most common etiology for the dental traumatic injuries among younger children is lack of motor coordination between 1-3 years, fall while playing during sports exercise followed by motor vehicle accident among 3 year or aged. Upper anterior teeth were found to be most generally traumatized teeth. In the present case also root fracture occurs due to the fall while playing⁷. The primary aim of treatment in the primary dentition is to relieve fear and anxiety in both the children and parents, give comfort to the child and to prevent damage to succedaneous tooth.

According to IADT guidelines, the treatment protocol of intra alveolar root fracture occurred extract only the loose coronal fragment. The apical fragment should be left in place to be resorbed⁸. The treatment of the root fracture in children generally depends on the child cooperation level and the amount of tooth structure lost due to trauma. Extraction of tooth at an early age not only affects the aesthetic, speech problems, intellectual impact, but also affects the quality of life of the children. In discrepancy, the trauma of which can be minimized by immediate replacement of teeth, rather using fixed prostheses⁹. A conventional fixed prosthesis isn't indicated in similar cases. A removable partial denture is generally unacceptable to the child as it's uncomfortable and needs patient compliance and also, it requires added laboratory steps¹⁰.

Therefore the use of fiber reinforced prosthesis can be a good choice in such cases. It provides enhanced esthetic concept, eliminates need for complicated laboratory steps, and can be readily performed as a chairside replacement. The use of natural teeth as pontic helps in achieving better esthetics and strength as compared to acrylic or compound teeth. Also, natural teeth give a more suitable surface for bonding of the fibre reinforced composite. The type of prosthesis described is an optimal method to restore esthetics in anterior tooth loss⁶.

In cases of intra alveolar root fracture, regular radiographic follow-up is needed to rule out the possible risk for permanent successors to be malformed due to position of the permanent tooth germ close to the roots of the primary teeth⁸.

CONCLUSION

Root fracture in the primary dentition is a rare entity which could be managed conservatively till the eruption of permanent teeth to prevent

intellectual trauma to both child and parents. The conservative management of root fracture in primary central incisor and the approach to use extracted natural tooth as pontic bonded to adjacent teeth with fiber reinforced resin. These cases should be followed radiographically and clinically till the eruption of permanent successors.

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