CASE REPORT

ROOT FRACTURE IN PRIMARY TEETH

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ABSTRACT

Dental traumatic injuries are not uncommon in children. When addressing problems involved with trauma to the primary dentition, we as Pediatric dentist not only have the responsibility of only looking in to the trauma to tooth but also to comfort the child and parents in the acute state, to avoid inducing dental fear and anxiety in young children who may be experiencing their first dental problem, and to minimize the risk of further damage to the permanent teeth. We present a case of a 3.5 year old reported to our OPD experiencing pain in her maxillary central incisors following traumatic injury after a fall.

Keywords: primary incisor, root fracture, diagnostic dilemma

INTRODUCTION

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). Maxillary central incisors are more commonly involved with incidence reported being 80% in the permanent dentition ¹. These sorts of root fractures are relatively uncommon among dental traumas, comprising 0.5–7% of the injuries affecting the permanent dentition where as in the primary dentition, root fractures are as rare as about 2–4%, due to the plasticity of the developing alveolar bone ². The occurrence of root fracture is most frequent at the age of 3–4 years where physiologic root resorption has begun, thereby weakening the root ¹. Diagnosis of root fractures always presents a formidable challenge for the clinicians because most of the root fractures remain asymptomatic. A young child is often difficult to examine and treat due to lack of co-operation because of fear. The situation is distressing to both the parent and the child. A child’s maturity and ability to cope with the emergency situation, the time for shedding of the injured tooth and the occlusion, are all important factors that influence treatment ³.

CASE REPORT:

A 3.5-year-old girl reported to the out-patient Department of Pedodontics and Preventive Dentistry, Faculty of Dental Sciences, M S Ramaiah University of Applied Sciences, Bangalore, with the chief complaint of a broken tooth in upper front tooth region since three days. Medical history and Dental history was nothing in particular. Child’s father gave the history of fall while playing 2 days back and the tooth got fractured. The child was conscious with no signs of vomiting or any change in behaviour. The child started having pain after a day in that fractured tooth and the pain was not relieved in any medication.

Clinical examination revealed fair oral hygiene; the patient was in primary dentition stage, the maxillary left incisor was noticed with fracture involving enamel, dentine and pulp extending subgingivally (Fig1). Diagnosis of root fractures always presents a formidable challenge for the clinicians because most of the root fractures remain asymptomatic. A young child is often difficult to examine and treat due to lack of co-operation because of fear. The situation is distressing to both the parent and the child. A child’s maturity and ability to cope with the emergency situation, the time for shedding of the injured tooth and the occlusion, are all important factors that influence treatment ³.

Investigation carried out included intraoral periapical radiograph. Radiographic assessment revealed a horizontal radiolucent line in the middle third of the maxillary right central incisor, and a horizontal fracture on the right central incisor at the apical third of the root. The succedaneous permanent incisors were noted at stage Nolla’s stage 4 (crown 3/4 complete) (Fig2).

Based on clinical and radiographic examinations, the patient was diagnosed with horizontal root fractures in maxillary right central incisor and
Consequences in the primary dentition comprised: colour changes, pulp necrosis, pulp canal obliteration, gingival retraction, permanent displacement after luxation, pathological root resorption as well as disturbances in physiological root resorption and lastly premature tooth loss. In a long-term study of 255 traumatized primary teeth, 23% of the corresponding erupted permanent teeth showed developmental disturbances. The highest prevalence was found after intrusive injuries of primary teeth.

In case of complicated crown fracture, size of the pulp chamber, stage of root development and degree of root resorption should be taken into consideration while planning the treatment. However, treatment decisions are often based on the child’s cooperation and on the further life expectancy of the affected primary tooth. According to IADT guidelines, in very young children with immature, still developing roots, it is advantageous to preserve pulp vitality by pulp capping or partial pulpotomy. This treatment is also the choice in young patients with completely formed roots. Calcium hydroxide is a suitable material for such procedures. Both treatments should be considered whenever possible, otherwise extraction is indicated. However extraction of the maxillary incisor is always last resort as premature extraction of this will not only will affect the aesthetics, speech and leads to space loss but also will impair the quality of life of the children. In the present case considering the age of the child ZOE pulpectomy was carried out with relation to left maxillary central incisor and restored with GIC (Fig3 &4).

DISCUSSION:

The prevalence of avulsion out of all types of traumatic luxation injuries to primary teeth ranges between 5.8% and 19.4%. This is due to the factors like pliable alveolar bone and vertically placed incisor teeth. However root fracture in primary tooth is less common if present they are most frequent at the age of 3–4 years where physiologic root resorption has begun, thereby weakening the root.

Over and above the trauma to the primary tooth will results in sequela not only to itself but also to the developing permanent tooth germs which lies in close proximity to the roots of the primary teeth. The prevalence of developmental disturbances of permanent teeth secondary to primary tooth trauma is reported to be between 12% and 69%, depending on the severity and type of the injury as well as the developmental stage of the permanent tooth. Tooth malformation, impacted teeth, and eruption disturbances in the developing permanent dentition are some of the consequences that can occur following severe injuries to primary teeth and/or alveolar bone.
In case of root fracture, according to IADT guidelines the treatment recommendation If the coronal fragment is displaced, extract only that fragment. The apical fragment should be left to be resorbed 8. If the coronal fragment is not displaced, the root is complete, and the patient cooperates, a semi rigid wire-composite splint may be indicated. In this case, it is important to inform the parents that the tooth will maintain certain mobility until its normal replacement. In most cases, root fracture is associated with crown displacement and gingival laceration. Extraction of only the coronal fragment is the treatment of choice. The apical fragment is left to be resorbed physiologically 10.

In the present case, Horizontal root fracture of right maxillary central incisor was noticed at the apical third. No crown displacement or mobility was noticed. And the occlusion was checked for any contact on the particular teeth. Since over jet and overbite was satisfactory the patient was kept under soft diet and regular follow up every week to ensure that the healing of the root fracture with relation to right maxillary central incisor is uneventful. Along with homecare instructions and chlorhexidine mouth rinse were prescribed. The patient is been followed up for past 4 months without any complains.

CONCLUSION:

The root fracture should be managed conservatively to promote a functional and aesthetic resolution, thereby minimizing the financial, physical, and psychosocial costs that would result from providing space maintenance. Over and above in the primary dentition, there is no satisfactory evidence to indicate the superiority of any one treatment. As a way to limit damage, do not interfere with the tooth germ development.

REFERENCES

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