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Case Report
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Intrusive Luxation of Deciduous Maxillary Right Central Incisor in a 2-Year-Old Female Due to Accidental Fall: A Case Report

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Abstract

Luxation injuries are most seen in deciduous dentition, resulting in damage to pulp and periodontium. The challenging task of managing these types of injuries depend on the clinical and radiographical follow up. In this case report, intrusive luxation of deciduous maxillary right central incisor in a 2-year-old female due to accidental fall has been highlighted. Spontaneous eruption was observed after 6 months of injury.

Keywords: Trauma; Dental; Eruption; Deciduous; Luxation; Intrusion

Introduction

Dental trauma involves 1/3 rd of the pediatric population pertaining to deciduous dentition. Etiology includes decreased motor coordination and deficiency in risk evaluation. Main causative factor for intrusive luxation is the resilience nature of alveolar bone. Intrusive luxation is defined as tooth displacement in an axial direction into the alveolar bone [1]. It is classified as complete due to enveloping nature of surrounding tissues and partial when incisal border of crown is seen. Age involvement begins from first year of life, toddler, crawling, walking, and exploring stages. Most susceptible age group is between 1 to 3 years, due to complete formation of roots of deciduous incisors. Frequency of deciduous maxillary incisors account between 63% and 92% [2,3]. In this scientific article a case of intrusive luxation of deciduous maxillary right central incisor in a 2-year-old female due to accidental fall has been reported, managed conservatively, through eruption.

Case Report

A 2-year-old female patient was referred to the Department of Pediatric Dentistry, one day after a fall on the floor. Clinical examination revealed intrusion of right maxillary deciduous central incisor, bleeding on pressure and lip contusion. General examination and neurological status were within normal limits. Orthopantomogram and intraoral periapical radiograph revealed foreshortening of the image thereby displacement of deciduous tooth away from the permanent tooth germ (Figures 1 and 2) To minimize the spread of infection, antibiotic therapy such as amoxycillin and analgesic such as paracetamol was started for 3 days.

Figure 1: *Orthopantomographic view depicting intrusively.*

Oral hygiene instructions such as soft tooth brushing, avoidance of oral habits such as thumb or digit sucking, soft diet, twice a week review for first 2 weeks and then every month till eruption. Around 6 months, 90% of the tooth has erupted (Figure 3). Patient was asymptomatic.

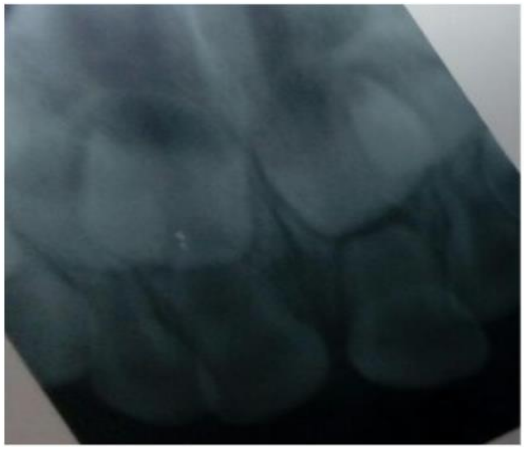

Figure 2: *Intraoral periapical radiographic view depicting in incisor.*

Figure 3: *Clinical view depicting reeruption.*

Discussion

Etiology links to fall involving baby carriages, hard objects, staircases, outdoor games, and child abuse. Mineralization and increased rigidity of alveolar bone increases the possibility of crown and root fracture in higher age group. Elasticity of alveolar bone occurs due to large marrow spaces resulting in displacement. Decreased resistance to intrusive luxation occurs in case of short roots, resorbing roots and high crown root ratio [4]. Luxation injuries due to objects in the child's mouth during fall might result in disturbance to the permanent tooth germ. Due to labial curvature of root, intrusion occurs in case of impact with axial component. Apex penetrates the labial plate leading to axial and labial displacement. Rupture of gingival fibers of the periodontal ligament palatially whereas compression of periodontal ligament occurs labially. Invasion and infection of the periodontal ligament occurs along the root surface due to detachment of gingival fibers. Oedema and disorganization of odontoblastic layer followed by nuclear pyknosis of pulp cells, hyalinization and diffuse calcifications occurs after trauma [5,6]. Diphtheria-pertussis-tetanus vaccine is usually administered at 18 months of age. In case of trauma, a booster dose is needed if immunization has not been done within 5 years. In behavioral aspect, decreased ability to communicate is seen in children younger than 3 years of age. Clinical examination includes central nervous system assessment such as nausea, vomiting, seizures, cyanosis, loss of consciousness, abnormal respiration, unsteadiness, rhinorrhea, slurred speech, otorrhea and eye movements. Extraoral examination includes head, neck, mandibular function, temporomandibular joint, facial asymmetry, lips, overlying skin, and nasal region. Intraoral examination includes inner aspect of lips, oral mucosa, tongue, teeth, gingiva, frenum, sulcus and vestibule assessment. Contusions of lower lip and chin are most found in intrusion. Clinically, complete intrusion of tooth might appear invisible due to blood clot and edematous gingiva around the incisal edges [7]. Classification of intrusion is as follows,

Grade I – more than 50% of tooth structure visible in mild partial intrusion.

Grade II – less than 50% of tooth structure visible in moderate partial intrusion

Grade III – Severe or complete intrusion

In case of alveolar bone fracture during intrusion, the involved teeth and the bone will move as a single unit. Radiographically, if the image of the deciduous incisor is foreshortened, then it indicates that the involved tooth is away from the permanent tooth germ whereas if the images is elongated then it indicates that the involved tooth is into the follicle of the permanent tooth. Management depends on the following factors,

1) Degree of intrusion – In mild cases, eruption is expected whereas extraction plays a sole role if there is infection or necrosis in moderate or severe cases. Ankylosis occurs when eruption does not occur in 4-8 weeks. Factors such as thumb or digit sucking act as hindrance for eruption.

2) Direction of intrusion - Labial curvature of deciduous maxillary incisor helps in movement away from the underlying tooth germ. Factors to be observed are periapical inflammation, pulp necrosis, ankylosis, external root resorption and pulp canal obliteration.

3) Alveolar bone fracture – perforation of buccal cortical plate during intrusion plays an important role in extraction of the offending tooth. 90% of intruded teeth will erupt spontaneously whereas only affected tooth with severely damaged periodontal ligament might result in ankylosis. Prognosis depends on the time lapse between the event and treatment.

Follow-up protocol is as follows,

1) Clinical examination in first week
2) 1+ radiographical examination in 3-4 weeks

3) 1 alone in 6-8 weeks
4) 2 alone in 6 months
5) 2 alone in 1 year (till exfoliation and eruption of permanent tooth)

The most widely accepted protocol for management of intrusive luxation of deciduous tooth in case of palatal movement is wait and watch for eruption. In case of inflammation, fever, malaise, pain, pulpal necrosis and pathological root resorption, the involved tooth must be extracted. Complications of anterior tooth loss includes difficulty in speech, development of tongue habits and an aesthetic setback [8-10]. The affected tooth was also palatially away from the permanent tooth germ radiographically. Parents were also educated to observe for oral habits so that it may not act as a hindrance to erupting tooth. Periodical clinical and radiographical reviews played an important role in wait and watch policy. Finally, eruption of the intrusively luxated right maxillary deciduous incisor occurred without any complications.

Conclusion

The treatment protocol depends on the direction and degree of intrusion. Maximum cooperation from the patient side can be obtained by following tell show do technique, short appointments, and presence of parents in the dental office. Clinical and radiographical evaluation should be done simultaneously to achieve successful outcome leading to restoration of aesthetics, function, and appearance.

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