

## **A Novel Treatment Approach in the Management of Extrusive Luxation in Primary Teeth**

**Gupta Megha<sup>1\*</sup> and Abhishek<sup>2</sup>**

<sup>1</sup>Assistant Professor, Department of Preventive Dental Sciences, Division Pedodontics, College of Dentistry, Jazan University, Gizan, Kingdom of Saudi Arabia

<sup>2</sup>Resident Dentist, Al – Marabi Primary Healthcare Centre, Ministry of Health, Gizan, Kingdom of Saudi Arabia

**\*Corresponding Author:** Gupta Megha, Assistant Professor, Department of Preventive Dental Sciences, Division Pedodontics, College of Dentistry, Jazan University, Gizan, Kingdom of Saudi Arabia.

**Received:** August 17, 2016; **Published:** September 09, 2016

### **Abstract**

Traumatic injuries to the primary dentition pose a great challenge to the pediatric dentist. The tender age of the child, unwillingness of the parents to seek treatment for primary teeth and the behavioral management concerns are the main reasons for the ignorance of these injuries by the parents as well as dentists too. A case of a three-year-old patient with extrusive luxation is reported. Surgical repositioning of the tooth and splinting was done. This was followed by the pulp therapy with calcium hydroxide based paste. The post-operative period was uneventful and the recovery was satisfactory after a period of 6 months. This paper emphasizes on the management of traumatic injuries in the primary dentition in a way so as to cause minimal damage to the permanent successor and at the same time restore the patient's oral health.

**Keywords:** *Extrusive luxation; Primary teeth; Repositioning; Splinting; Dental trauma*

### **Introduction**

Trauma to the primary dentition most commonly affects maxillary anterior teeth. The majority of injuries are luxation in case of primary dentition in contrast to permanent dentition where fracture of the teeth is more common [1]. In primary dentition, the surrounding bone is less dense and less mineralized, due to which a tooth hit by a traumatic impact can easily be displaced instead of fractured [2,3]. Extrusive luxation is defined as the partial displacement of the tooth out of its socket. Most of the luxation injuries represent a combined injury to the pulp and periodontium. Changes seen in the pulp soon after injury include edema and disorganization of the odontoblast layer as well as nuclear pyknosis of pulp cells. Histologic evidence of pulp necrosis can be seen by 6 days after injury. This response is related to either partial or total rupture of the pulpal neurovascular supply [1]. In the present case, surgical repositioning and splinting followed by pulpectomy of a primary incisor is reported after sustaining extrusive luxation.

### **Case Report**

A three-year-old girl reported to the Department of Paedodontics with the chief complaint of pain and swelling in the upper front tooth. On questioning the parents, it was revealed that the girl had fallen on the floor while playing at home almost ten days back. The mother noticed that the left upper front tooth was slightly displaced but there was no associated pain or swelling. Hence the parents did not seek any dental treatment than and ignored the injury. However, the child complained of pain with respect to the luxated tooth on the present day and the mother also noticed a swelling and so they visited the dentist. This was the patient's first dental visit. The patient's tetanus immunization was complete. The medical history was non-contributory.

The modality of “tell, show, do” was practiced at all appointments to gain the child’s co-operation. Compliance was further enhanced by giving short, clear commands and positive verbal reinforcements. No abnormalities were detected on the extra-oral examination. The visual intra-oral examination showed the maxillary left central incisor had extruded (2 mm) and appeared elongated (Figure 1). There was localized gingival swelling suggestive of acute periapical abscess associated with the extruded tooth. The tooth exhibited grade 1 mobility and was tender on percussion and palpation. No signs of alveolar fracture were detected by gentle palpation of the mucosa in the traumatized area.



**Figure 1:** Extrusion and acute periapical abscess seen in relation to maxillary left central incisor, tooth no.61.

The intra-oral periapical radiograph of the maxillary anterior region showed displaced and apical increased periodontal ligament space of the maxillary left central incisor (Figure 2). After the application of local anesthetic, the tooth was repositioned with combined labial and palatal pressure. The tooth was adequately repositioned as seen both clinically and radiographically. Acid-etch composite resin splinting was done from canine to canine to stabilize the tooth. After splinting, emergency access opening and debridement of the necrotic tissue was done to relieve the patient of the pain and pressure.



**Figure 2:** Pre-operative radiograph showing the apical increased periodontal ligament space and bone rarefaction in relation to maxillary left central incisor, tooth no. 61.

On the subsequent visit, pulpectomy of the involved tooth was completed using a calcium hydroxide based obturation material Endo-flas. A postoperative radiograph was taken to assess the extent of root filling (Figure 3). The parents were advised brushing with a soft brush after each meal and applying chlorhexidine (0.1%) topically to the affected area with cotton swabs twice a day for 1 week. This would prevent the accumulation of plaque and debris. They were also advised soft diet for 2 weeks. Splinting was removed after 14 days. Satisfactory healing with no post-operative complications was seen after a follow-up of 6 months (Figure 4, 5). Since, the patient’s family moved to another city so further follow-up could not be done.



**Figure 3:** Intra-oral periapical radiograph of the maxillary anterior region showing splinting after surgical repositioning of the incisor. Complete obturation of the maxillary left central incisor is evident.



**Figure 4:** Post-operative intra-orally.



**Figure 5:** Post-operative radiograph after 6 months' follow-up.

## Discussion

Traumatic injuries to the primary dentition are often overlooked by parents mainly because less attention is given to the primary dentition and to the child's inability to cope with the situation. Some important factors govern the selection of treatment for injured primary teeth. The relatively short time period the primary teeth are in function, close proximity of the root of the primary tooth to its developing

successor and difficulty in gaining the compliance from the child.<sup>1</sup> The maintenance of primary teeth in a healthy or non-pathologic situation until their exfoliation time is an important factor for the promotion of function, esthetics and phonetics.

The option that has the least likelihood to have a deleterious effect on the permanent tooth should be considered as the treatment of choice. If no damage is expected to the permanent tooth, a conservative approach should be adopted and attempts made to save the injured primary teeth. Premature loss of the primary tooth can lead to malocclusion, esthetic, phonetic or functional problems that may be transient or permanent in nature [4].

Treatment decisions for extrusive luxation in a primary tooth depends on [5]:

- Degree of displacement
- Mobility
- Root formation
- Ability of the child to cope with the emergency situation.

In the present case, there was 2 mm extrusion, grade 1 mobility and the root formation was complete. The behavior of the child in the dental operatory was graded as positive according to the Frankel's behavior rating scale [6]. Hence, it was decided to carefully reposition the tooth and stabilize it by splinting with acid-etch composite resin splint.

One of the most severe complications of an injury is infection. The supporting apparatus of a healthy tooth is protected against invasion of oral microorganisms by the attached gingiva. As the tooth is pushed in luxation injury, rupture of this attachment is unavoidable. Oral bacteria can now infiltrate and infect the wounded tissue [7]. In this case also, the child had an acute periapical abscess in relation to the luxated incisor. Hence, on the same visit, an emergency access opening was done to drain the pus and necrotic tissue. The primary goal of pulp therapy in the primary teeth is to eliminate infection and retain the tooth in a functional state until it is normally exfoliated, without endangering the permanent dentition or the health of the child [8].

On the subsequent visit, the pulpectomy of the tooth was completed using Endoflas. It is a resorb able paste obtained by mixing a powder containing tri-iodmethane and iodine dibutylorthocresol (40.6%), zinc oxide (56.5%), calcium hydroxide (1.07%), barium sulfate (1.63%) with a liquid consisting of eugenol and paramonochlorophenol [9]. Iodoform based paste are highly effective for abscessed primary teeth due to its disinfectant and resorb able properties [10]. Further, Endoflas only resorbs when extruded extra-radicularly, but does not wash out intra-radicularly. The material is hydrophilic and can be used in mildly humid canals. It firmly adheres to the surface of the root canal to provide a good seal [9].

In conclusion, surgical repositioning, splinting and pulp therapy were successful in the management of extrusive luxation in primary teeth. The post-operative period was uneventful and healing was satisfactory. This case report also emphasizes on the need to consult a dentist immediately when injury to a primary tooth occurs.

### Bibliography

1. Flores MT, *et al.* "Injuries to the primary dentition". In: Andreasen JO, *et al.* Textbook and color atlas of traumatic injuries to the teeth, 4<sup>th</sup> edition. Blackwell Munksgaard, Oxford, 2007: 516-41.
2. Ravn JJ. "Sequelae of acute mechanical trauma in the primary dentition: A clinical study". *Journal of Dentistry for Children* 35 (1968): 281-289.
3. Meadow D, *et al.* "Oral trauma in children". *Pediatric Dentistry* 6 (1984): 248-251.
4. Fuks AB and Eidelman E. "Pulp therapy in the primary dentition". *Current opinion in dentistry* 1 (1991): 556-563.

5. Flores MT, *et al.* "Guidelines for the management of traumatic dental injuries. III. Primary teeth". *Dental Traumatology* 23 (2007): 196-202.
6. Frankl SN, *et al.* "Should the parent remain with the child in the dental operator?" *Journal of Dentistry for Children* 29 (1962): 150-163.
7. Gupta M. "Intrusive luxation in primary teeth – Review of literature and report of a case". *The Saudi Dental Journal* 23.4 (2011): 167-176.
8. Nurko C and Garcia Godoy F. "Evaluation of calcium hydroxide/iodoform paste (Vitapex) in root canal therapy for primary teeth". *The Journal of clinical pediatric dentistry* 23.4 (1999): 289-294.
9. Fuks AB, *et al.* "Root fillings with Endoflas in primary teeth: a retrospective study". *The Journal of clinical pediatric dentistry* 27.1 (2002): 41-46.
10. Rifiklin A. "A simple, effective, safe technique for the root canal treatment of abscessed primary teeth". *Journal of Dentistry for Children* 47.6 (1980): 435-441.

**Volume 5 Issue 1 September 2016**

**© All rights reserved by Gupta Megha and Abhishek.**