



## CASE REPORTS

# MANAGEMENT OF LUXATION INJURIES IN PEDIATRICS - CASE SERIES

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### ABSTRACT

Traumatic injuries to teeth are common in children. Due to trauma, the teeth become luxated or sometimes avulsed. These teeth are to be repositioned and stabilized using splints but splinting in children is more complicated because of the mixed dentition. This article presents two case reports where there were traumatic injuries to anterior teeth and they were stabilized using a commonly followed splinting technique, the acid-etch composite wire splinting.

## INTRODUCTION

Trauma to oral structures is most common among traumatic injuries and almost accounts for 5% of total injuries. In children, the incidence is as high as 18%.<sup>1,2</sup> Children with injuries to their teeth and their concerned parents present a challenge for the dentist.<sup>3</sup> The majority of dental injuries in permanent dentition involve the anterior region of the maxilla, of which luxation injuries comprise 15–61% of the dental traumas that include lateral, intrusive, and extrusive luxation injuries.<sup>1</sup> Traumatic luxation is a type of injury that involves eccentric displacement of the tooth, accompanied by communication or fracture of the alveolar socket.<sup>4</sup> An appropriate treatment plan after an injury is important for a good prognosis. Guidelines are useful for dentists and other healthcare professionals in delivering the best care possible in an efficient manner.<sup>5</sup> The accepted treatment for lateral luxation is the repositioning of the tooth at the earliest and stabilization with a splint for up to 3 weeks.<sup>4</sup> The present article reports of 2 cases of luxation injuries in children treated by stabilization using a splinting technique.

### CASE REPORTS

**Case 1:** A male child of age 9 years has reported to the Department of pediatric dentistry, Prasad hospital Hyderabad with a chief complaint of loosening upper front teeth.

The patient gave an alleged history of trauma due to fall 10 days back. On clinical examination, it was found that there was luxation injury to 11, 21, and 22. There was labial displacement in relation to 11, 21, and palatal displacement in relation to 22 (Figure 1). OPG revealed that the roots of all three teeth were immature with open apices. After anesthetizing the area teeth were repositioned into their original positions in the socket as far as possible. As the injury was reported late, complete repositioning was not possible into the socket. Acid-etch Composite wire splinting was done from canine to canine. Lacerations were sutured (Figure 2). The patient was recalled weekly for 3 weeks. Healing was assessed after 3 weeks and splints were removed (Figure 3).

**Case 2:** A 10-year-old female patient reported to the Department of pediatric dentistry, Prasad hospital Hyderabad with a chief complaint of injury to upper front teeth. The patient gave alleged history of road traffic accident while crossing a road. The medical examination was done, head injuries were ruled out and extraoral injuries were addressed. The patient was then referred to the Department of pediatric dentistry for further treatment. On intra-oral examination, there were laceration injuries on the gingiva of 11, 12, 21, and 22. Subluxation injury was seen in 21 and extrusion is seen in 11 (Figure 4).



Figure 1. Pre-operative



Figure 5. Acid-Etch composite wire splinting



Figure 2: Acid-Etch composite wire splinting



Figure 6. Post- operative 3 weeks follow up



Figure 3. Post-operative 3 weeks follow up



Figure 4: Pre-operative

The teeth were repositioned and stabilized using composite wire splinting (Figure 5). The patient was followed up for 2 weeks. After 3 weeks the mobility was evaluated and the healing was found to be satisfactory and the splint was then removed (Figure 6).

## DISCUSSION

Luxation injuries affecting both multiple teeth and surrounding soft tissues are mainly reported in children and are typically occur as a result of trauma.<sup>6</sup> Displaced and luxated teeth undergo damage to the pulp and periodontium. An immature permanent tooth with an open apex has a great capacity for post-traumatic healing and the prognosis is relatively better.<sup>7</sup> The stabilization of injured teeth using the adjacent sound teeth is considered the best practice to support the tooth at the right position and in function because it allows the exposure of the injured teeth to physiologic forces existing in the oral environment. Moreover, the stabilization either reduces or avoids pain, offers comfort to the patient, and protects the teeth from traumatic forces during the healing process.<sup>8</sup>

The following are conditions that may require splinting:<sup>9</sup>

- An avulsed tooth that has been replanted.
- displaced tooth that has been repositioned
- An extruded tooth that has been pushed back into its socket

- A root fractured tooth that is mobile
- A mobile tooth that is interfering with eating.
- Teeth that are only slightly mobile and are not in any danger during eating or function are best left unsplinted. The duration of splinting for subluxation, extrusive luxation, and avulsion is 2 weeks, lateral luxation root fracture (middle third), and alveolar fracture need 4 weeks and root fracture in cervical third may require up to 4 months of duration for splint removal.

**Acid-Etch Composite and Wire Splint:** The advent of the acid etch technique has given dentists the ability to fabricate at the chair side a simple, effective means of stabilization. In nearly all cases of moderate and severe displacement, a splint of some type must be made.<sup>3</sup> According to the current guidelines, a flexible or semi-rigid splint such as the titanium trauma splint and a wire-composite splint is appropriate for splinting teeth with dislocation injuries and root fractures.<sup>7</sup> Acid etch-composite and wire splints are perhaps the most commonly used in clinical practice and are flexible splints when the wire has a diameter of a number greater than 0.3–0.4 mm.<sup>10</sup> It is one splint that meets nearly all the criteria for an ideal splint. The wire recommended is 0.7 mm soft stainless steel. At 0.7 mm it is flexible enough to allow some physiological movement of the teeth but will stabilize the traumatized tooth in its socket, and soft wire is much easier to bend than hard wire. One more factor to be considered is that children do not damage their teeth solely within normal practice hours and in the evenings and weekends, and the dentist may sometimes need to attend an accident in the emergency department. Here there may be problems with the availability of materials and limitations of equipment. An advantage of the acid-etch composite and wire splint is that a special emergency pack can be assembled for such locations. If light-cured composite is not available, chemically cured composite can be used. Alternatively, a cold-cure methyl methacrylate resin can be used.<sup>9</sup> It is important in all cases of luxation of teeth that assessment must be undertaken at 6 monthly intervals for at least 2 years following the removal of the splint or on reeruption of the teeth following the intrusion.<sup>4</sup>

## CONCLUSION

Though many other methods are preferred over acid etch composite splinting for traumatized anterior teeth, the method described here uses the commonly available materials in any dental setup and the technique followed is also relatively easy. The splint is flexible enough to facilitate physiological healing and rigid enough to facilitate healing hence can be used most of the time.

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