



MANAGEMENT OF MULTIPLE TRAUMATIC DENTAL INJURIES IN A 10 YEAR OLD CHILD- A CASE REPORT

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Introduction

Traumatic dental injuries are a public dental health problem and can occur any time through the life. Trauma is one of the most common presentations of young children to a Pediatric dentist. During childhood the development of the occlusion is dependent on the satisfactory presence of teeth. Unwanted disastrous results can occur when a trauma is inadequately treated. It also leads to premature tooth loss, and pulpal death, abscess formation also malformed or mispositioned teeth.

The international association of dental traumatology reports that one of every two children sustains a dental injury, most often between the ages of 8 and 12 years. Multiple causes contribute to tooth trauma with the major focus on falls and collisions, sporting activities, domestic violence, automobile accidents and assaults. Each causative factor presents with unique circumstances and combined with the age of the univocal, a mosaic of traumatic injuries can emerge and apart from this, predisposing factors are also essential to consider (McDonald 1987¹, Finn 1988², Mathewson 1993³, Anderson 1995⁴).

Tooth avulsion is one disturbing injury defined as the condition in which whole tooth is completely separated from the supporting tissues. It accounts for 0.5–3% of all dental injuries⁵⁻⁷ (J O Andreasen 1994).

It is clinically classified as ELLIS class V tooth fracture. The primary goal in treating an avulsed tooth is to preserve and treat the supporting tooth tissues and to replant the avulsed tooth.

Intrusive luxation is displacement of the tooth into the alveolar bone along the long axis of tooth . Intrusive luxation have been found to comprise 0.3-2.4% of the traumas.⁸ (Andreasen JO 1972)

Case Report

A 10 years old girl reported to the department of Pediatric and Preventive Dentistry with the chief complain of trauma to the face. Extraoral examination showed multiple bruises on the left half of lower lip. Intraorally there was avulsion of maxillary right central incisor and intrusion of maxillary left central incisor. Multiple soft tissue lacerations in labial sulcus were observed.

History revealed a contact sport injury one day back on playground. The trauma had caused loss of 11 from the socket and intrusion of 21. The intrusion was quite severe and was approximately 6 mm from its previous position.

After the trauma, tooth was not stored in any media. Patient reported after 24 hours with avulsed tooth, wrapped in cloth in dry condition. Radiographic examination by IOPA X-rays of maxillary anteriors and Orthopantomograph did not reveal any associated additional dento-alveolar fractures. **(Figure 1)** All the incisors had an incompletely formed open apex. An immediate treatment was initiated. Soft tissue injuries and lacerations were cleaned and bleeding was stopped.

It was decided to reimplant the avulsed tooth immediately. Since the patient reported late and already 24 hours had passed, it was decided to perform endodontic treatment extra orally. Root canal was cleaned by Endodontic hand instruments and irrigated thoroughly with saline. Retrograde MTA apexification was performed to seal the apex of the tooth and the root canal was filled with Gutta-percha by lateral condensation method. Coronally the sealing was done with GIC (GC FUJI Type IX). The root surface was scrapped of with a no.11 blade to remove the PDL remnants and debris was cleaned thoroughly in continuous stream of saline. The tooth was then placed in doxycycline solution for 5 minutes.

Meanwhile the socket and surrounding area was irrigated with normal saline and the blood clot was removed carefully with moist gauze and once again was irrigated with saline. After cleaning of the socket, tooth was placed inside the socket with minimum pressure to obtain its previous position in the socket.

After reimplanting the 11 the intruded 21 was carefully grasped with the help of maxillary anterior forceps and slowly extruded back to its original position. **(Figure 2)**

After repositioning both the teeth, in their respective places, a flexible type of splint was placed using soft ligature wire and the flowable composite. Child was advised soft diet and good fluid intake for a week. A five days course of antibiotics and anti-inflammatory medication was considered and was recalled after three days for initial clinical checkup.

After three days inflammatory extraoral swelling in the region of upper lips was observed. However, the child did not have significant pain or any problems with food intake. At follow up after seven days swelling subsided completely. On tenth day of splinting, splint from only right maxillary central incisor (reimplanted tooth) was released carefully to allow physiological tooth movement and splinting was continued with the left maxillary central incisor for six weeks. The patient was recalled after three months and six months for follow up. **(Figure 3)**

At the sixth month of follow up the child did not have any discomfort with the maxillary anterior region, and she was then evaluated for clinical and radiographic findings . On the clinical examination with right and left central incisors, physiologic mobility was present with right Central Incisor and tenderness on percussion with right and left Central Incisors found to be negative. On the percussion of left Central Incisor (21), dull/rough sound was heard which indicated probable ankylosis with the same. On the radiographic evaluation of right Central Incisor which was avulsed , establishment of PDL space was seen, whereas the left Central Incisor showed absence of PDL space apically. **(Figure 4)**

Discussion

Tooth avulsion in children and adolescents requires an urgent intervention to increase the chances of successful reimplantation. The extra-alveolar time until reimplantation, storage medium, handling, and periodontal ligament condition of the avulsed tooth as well as the patient's general health decides the success of the treatment. Prolonged post-injury dry extra-oral conditions worsen the prognosis and increase the risk of root resorption. Replantation of an avulsed tooth may maintain the esthetics, functions, and alveolar bone height.

In this case the extraoral dry time span for right Central Incisor was 24 hours. Hence it was anticipated that the prognosis of pulpal and periodontal health would be low. Goal of the treatment was to retain the avulsed tooth and maintain the esthetic appearance and occlusal function which would stop the inflammatory root resorption or replacement root resorption.

Previous studies have observed that when the extraoral dry time of an avulsed tooth is more than 60 min, percentage of viable periodontal cell reduces to half which may elicit severe inflammatory response over an alveolar socket. Success of the Reimplantation of an avulsed tooth is justified by the severity and inflammatory reaction occurred after the trauma. Hence to avoid the repercussions of the trauma the tooth was cleaned with normal saline to remove all the necrotic periodontal cells and debris (TROPE M)⁹. The way body responds to accept the reimplanted tooth is difficult to predict even after following all the recommended protocols. Current case showed good establishment of Periodontal ligament space and was clinically normal for percussion test which was not expected due to prolonged extraoral dry time and the contaminated root surface in playground.

It was positive to find the intruded tooth showing continued root development but disturbing factor was rough sound for percussion which indicate that the tooth might have been ankylosed. Looking at lack of resorption of reimplanted 11 and continued root development of intruded 21 and lack of any clinical signs and symptoms of infections, present case sets an example for not neglecting any avulsed tooth for reimplanting even when the patient reports late. The next factor to contribute for the success of present case is presence of open apex in 11 and 21. Vital cells at the apical area are definitely a blessing for continued root development and also for apical healing. Moreover consideration of flexible type of splinting is also a positive contributing factor as it permits normal physiologic movements of tooth within the socket (Finucane D 2003)¹⁰. At the end of six months the results showed were highly positive. Expecting further success further follow up for next two years at every six monthly intervals are recommended.

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FIGURES



FIGURE 1.



FIGURE 2.



FIGURE 3.



FIGURE 4.

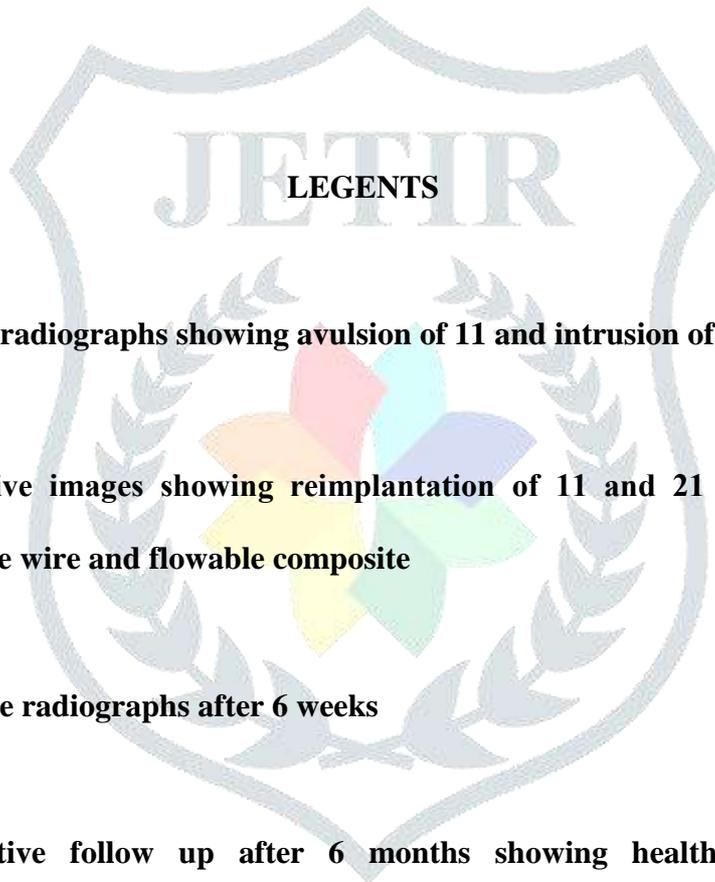


FIGURE 1. Preoperative radiographs showing avulsion of 11 and intrusion of 21

FIGURE 2. Intraoperative images showing reimplantation of 11 and 21 in it's position , flexible splinting with soft ligature wire and flowable composite

FIGURE 3. Post-operative radiographs after 6 weeks

FIGURE 4. Post-operative follow up after 6 months showing healthy gingiva , appreciable establishment of the periodontal ligament space with 11 and continued growth of root with 21.