

Dental Management of Complete Avulsion of Immature Rooted Central Incisor: A Case Report

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Introduction

Pediatric dental trauma occurs regularly, and studies disclose that 25-30% of children will be exposed to some form of dental trauma by the time they reach adulthood. Although most of the pediatric dental trauma occurs before the age of 5 years according to the studies. However, children in their late childhood/early adolescence are still at risk for experiencing dental trauma due their active lifestyles. The AAPD trauma guidelines are a great tool in aiding the treatment of pediatric dental trauma specifically highlighting the importance of timely follow-up appointments. This guideline provides strict timelines for follow-up that are critical to ensure proper healing, assessing for any complications, and providing therapeutic treatment if needed. The guideline was created based on the type and severity of the trauma.

Case Report

Patient Background

Chief Concern: An 8-year-old Caucasian female was seen at the pediatric emergency department at the University Medical Center hospital after tooth #8 was completely avulsed during an incident at home while playing with their brother.

Medical Conditions: None

Medications: None

Allergies: Penicillin (Full body hives)

Birth: Full term birth with no complications

Intraoral Evaluation (see *Figure 1*): Complete avulsion of tooth #8 without alveolar fracture or gingival lacerations.

Radiographic Evaluation (see *Figure 2*): No signs of alveolar fracture, two supernumeraries present, no PDL widening of adjacent teeth.

Diagnosis #1: Complete avulsion of immature rooted permanent central incisor

a. Reimplantation (see *Figure 3*)

The patient's mom stated that even knowing the risks of tooth infection, ankylosis, and color change, reimplantation was the informed treatment of choice. Used old photos of the child to position the tooth in original position. Extraoral dry time was 5 minutes since patient presented with tooth in buccal vestibule.

b. Oral Antibiotics

Due to the environment of the avulsed tooth, and to minimize inflammatory resorption, systemic antibiotics are recommended. Patient is allergic to Penicillin, Azithromycin was the antibiotic of choice for a 5 day course.

Treatment #1: Reimplantation with Flexible Splint

a. Irrigation (see *Figure 4*)

Irrigated the alveolar socket with sterile water to remove the existing blood clot. Clearing out the alveolar socket to prepare for the reimplantation of the tooth with a path of least resistance.

b. Reimplantation with Flexible Splint

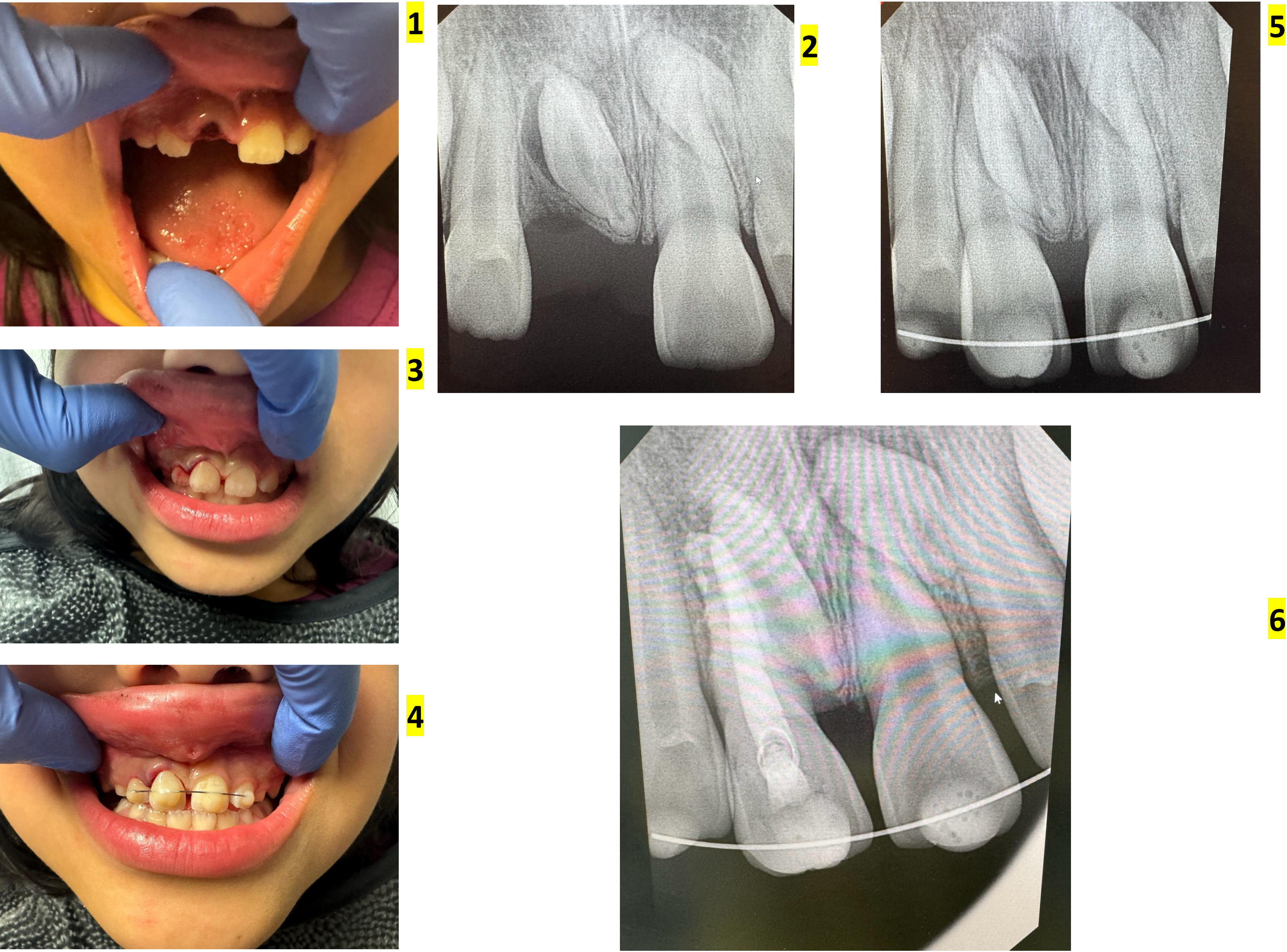
Reimplanted the tooth with finger pressure, monitoring the position of the tooth extra orally and confirming the position with radiographs. Checked with guardian to note that the position of the tooth was close to its original state. The flexible splint that was placed was 0.016 round stainless steel bonded with flowable composite after proper etch/bond protocol.

Confirmed Diagnosis: Reimplantation with flexible splint and initiation of root canal therapy (see *Figures 5 and 6*)

Patient sustained trauma to the anterior dentition resulting in a completely avulsed #8 with an immature root. The patient placed the avulsed tooth into the buccal vestibule after avulsion noting that extra oral dry time was 5 minutes. Initial radiographs were captured to evaluate the alveolus prior to reimplanting. The alveolar socket was irrigated prior to cleanse the socket and prepare for reimplantation. Tooth #8 was reimplanted into the socket and additional radiographs were captured to make sure the tooth was in the proper position. Once the proper position was captured and confirmed with guardian, the dentition was prepared for a flexible splint. The maxillary anterior segment was prepared with 37% phosphoric acid etch and Scotchbond™ Universal Adhesive, (3M, St. Paul, MN) universal bond, bonding the flexible .016 round stainless steel wire using flowable composite. Guardian was informed about the importance of a timely follow protocol. After 2 weeks the patient missed the follow up appointment knowing root canal therapy needed to be initiated. Root canal therapy was initiated at week 4.

Conclusion

As the case report demonstrated, complete avulsion of permanent dentition treatment choice is reimplantation understanding that strict follow up is indicated for treatment success. Pediatric patients are much more likely to tolerate conservative treatment approaches, which the guardian chose in this situation. It is important to note that this approach usually takes strict follow up timelines, to manage the traumatized tooth properly. However, even with following the follow up timelines properly there are still risks involved with reimplantation. Currently, most researchers recommend reimplantation regardless of the risks that can present (1). Clinicians should treat each patient on a case-to-case basis when deciding on conservative versus non-conservative approaches with being guided by guardian informed consent.



References

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