

Avulsion: Case Report

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Abstract

Avulsion is one of the most serious dental injuries, which involves complete displacement of a tooth from its socket in the alveolar bone. The prevalence of avulsion among permanent teeth is seen in 0.5%–16% of all dental injuries. Prognosis of this type of dental trauma is dependent on many circumstances, including the site of the injury, time prolapse since the trauma and what type of treatment intervention had been provided. Follow-up, as well, is crucial for the trauma case in order to optimize the best favorable outcomes and avoid unfavorable ones. This case report demonstrates the dental rehabilitation of an adolescent following a trauma to the anterior permanent teeth that includes avulsion and lateral luxation. This presentation includes the initial encounter visit, intervention and follow-up visits using evidence-based dentistry to maximize the potential and achieve the best possible favorable results.

Introduction

- An avulsion injury is a challenge to address and there are many treatment options to consider to attain the best prognosis depending on the avulsion scenario.¹
- The goal of the updated guidelines of the International Association of Dental Traumatology's (IADT) is to provide information for the immediate and urgent care of traumatic dental injuries.²
- The prognosis for avulsed permanent teeth is strongly dependent on the actions taken at the place of accident. Public awareness promotion of first-aid treatment for the avulsed tooth is substantially encouraged.²
- Overall prognosis is dependent on many circumstances at the site of the injury and what type of treatment option was chosen.¹
- The treatment choices and prognosis for the avulsed tooth are robustly dependent on the viability of the periodontal ligament (PDL), and the maturity of the root.²
- Although replantation may save the tooth, it's crucial to understand that some transplanted teeth have a small probability of lasting a long time and may end up being lost or compelled to be extracted at a later time.¹
- The final decision regarding the treatment option and patient care remains primarily with the treating dentist. However, the consent to execute the final decision rests with the patient, parent, or guardian.¹

Case Report

A 17-year-old healthy male patient presented to Tufts Pediatric department for a follow up for his avulsed teeth from the night prior. Patient fell of a trampoline, at midnight in the backyard, where three teeth were avulsed (spent more than 50 min searching for some of the teeth) and one tooth was luxated. Patient presented with fragile putty splint and 17 sutures (7 intraoral/ 10 extraoral) placed on the lower lip that were done at a hospital ED Dept that is near the patient's house. Initial treatment at the ED included CT scan and Ampicillin antibiotics for the patient. Upon clinical examination, teeth #7, #8, #9 were mobile, tooth #10 was malpositioned, lower lip swollen, and lacerations was evident on upper lip and chin.



Fig.1 Pre-operative intraoral photograph

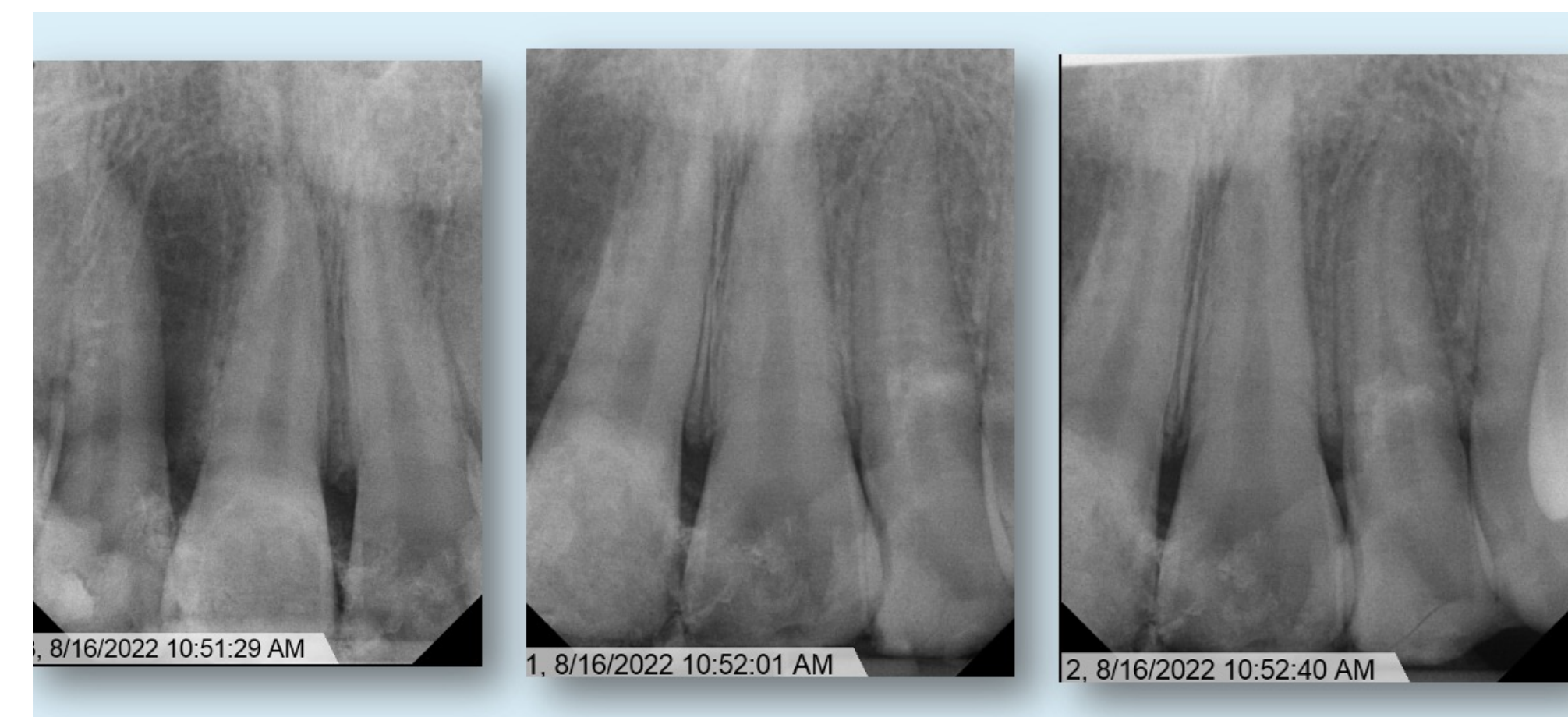


Fig. 2 Pre-operative periapical radiographs showing teeth #7, #8, #9, #10

Management

First visit:

1. Putty splint was removed, saline irrigation was used. Topical anesthetic and LA administered
2. Teeth #7, #8, #9 were repositioned into their sockets respectively
3. Tooth #7 was very mobile and has about 5 mm buccal root exposure (repositioned to the most correct possible position)

First visit (Continued):

4. Kobayashi splint wire used (3 twisted pairs) after being measured and adjusted accordingly on the facial surfaces of the teeth from #5 - #12
5. Occlusion was checked, no interferences detected

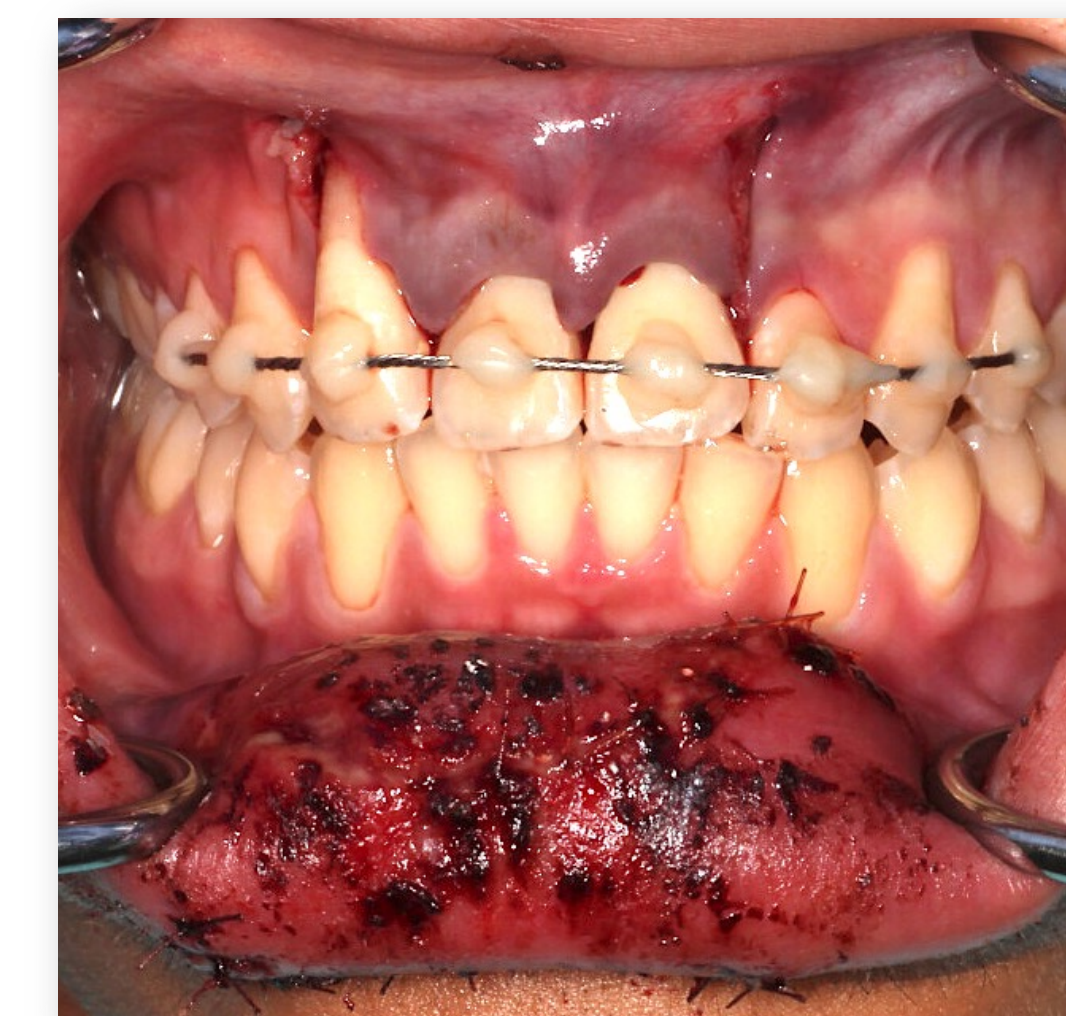


Fig.3 Intraoral view of the splint at the first visit



Fig.4 Three pairs of twisted Kobayashi wire

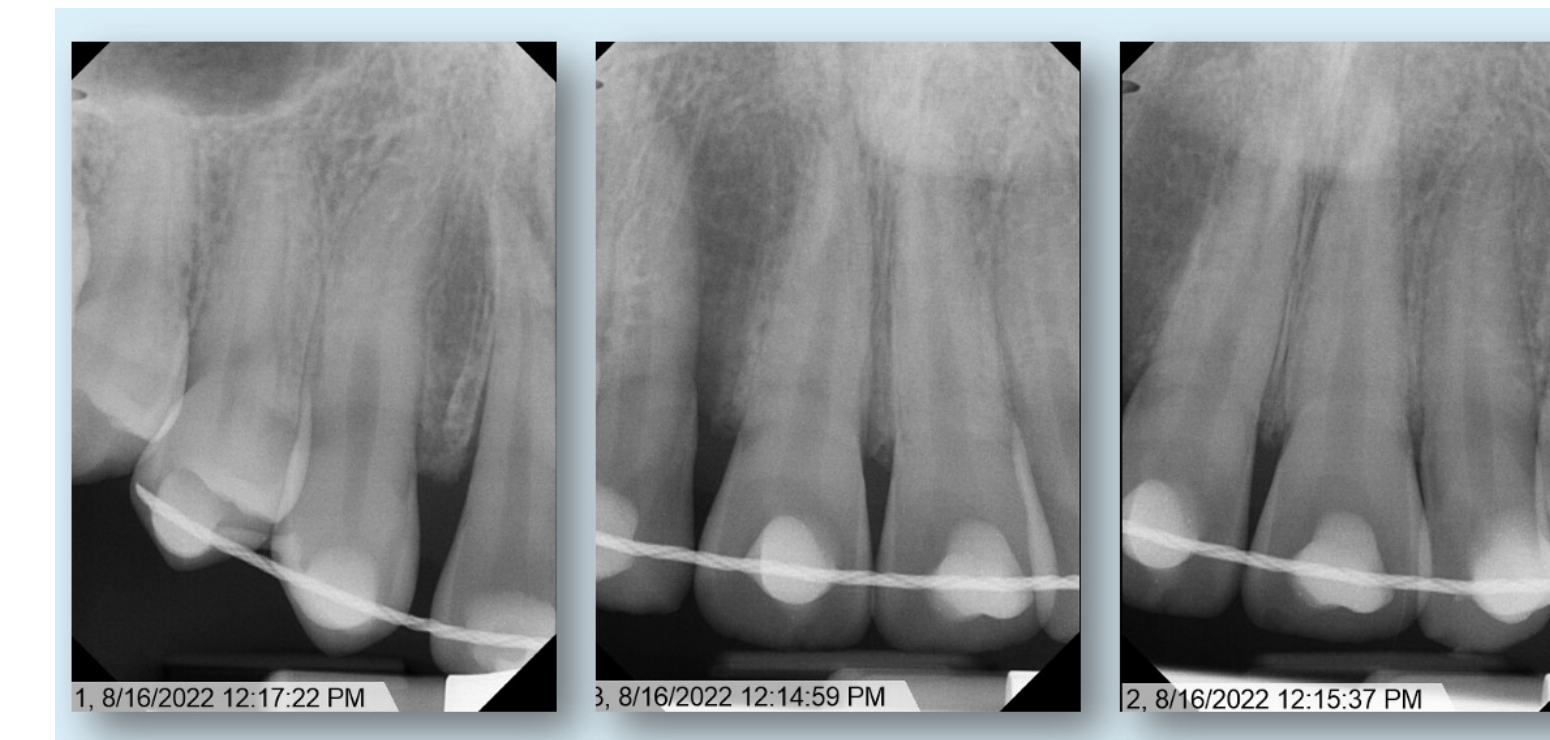


Fig. 5 Post-operative periapical radiographs showing teeth #7, #8, #9, #10

Second visit (2 weeks follow-up):

1. One week follow-up was through Tele-dentistry
2. Teeth were slightly mobile, continue with the splint on the upper anterior for total of 4 weeks
3. Lower lip swelling subsided, some of the extraoral sutures are still visible extra-orally



Fig.6 One week follow-up through Tele-dentistry

Third visit:

1. Pulpotomy for teeth #7, #8, #9 was performed
2. Intercanal medicament (Vitapex) was placed into the canals
3. Access cavities were temporized with cotton pellet and Fuji IX

Fourth visit:

1. Lower lip healing, with minimal tenderness
2. Teeth #7, #8, #9, #10 are stable with no sign of mobility or pathosis
3. Splint was removed, teeth polished and smoothed

Subsequent visits:

1. Endo Dept – RCT completed for #7, #8, #9
2. Ortho Dept – Consult for repositioning of the teeth



Fig.7 Periapical radiographs show teeth #7, #8, #9 after pulpectomy and splint removal



Fig.8 Intra-oral and extra-oral frontal view after splint removal



Fig.9 Periapical radiographs show teeth #7, #8, #9 after RCT completion by Endo Dept

Conclusion

The best prognosis following an avulsed permanent tooth depends on prompt and effective emergency management. The guidelines of International Association of Dental Traumatology (IADT) for the emergency management of dental traumatic injuries are useful for delivering the best possible care in an efficient manner. Although employing the suggested methods can increase the likelihood of success, IADT does not promise favorable results from implementing the guidelines.

References

1. Fouad AF, Abbott PV, Tsilingaridis G, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 2. Avulsion of permanent teeth [published online ahead of print, 2020 May 27]. *Dent Traumatol*. 2020. <https://doi.org/10.1111/edt.12573>
2. Levin L, Day PF, Hicks L, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: General Introduction. *Dent Traumatol* 2020; 36:309-313. <https://doi.org/10.1111/edt.12574>.