



# Management of extensive multiple dentoalveolar trauma in an adolescent patient

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## Introduction

Traumatic dental injuries occur frequently among children and adolescents, with reports of 1 in 4 school-age children and 1 in 3 adults having experienced dental trauma before 19 years of age<sup>1</sup>. Sporting activities are associated with an increased risk of orofacial injuries due to falls, collisions, and other forms of contact<sup>2</sup>. When extensive orofacial trauma involving tooth avulsion occurs, timely management and appropriate referral are required to improve treatment outcomes.

## Case Report

A 14-year-old male patient was transferred to the Riley Hospital emergency department from a community hospital after a BMX biking accident which occurred approximately 5 hours earlier. The patient's medical history is essentially negative, and he is not currently taking any medications and has no known drug allergies. The patient reported no history of loss of consciousness. A neurological assessment was performed by the emergency department physicians which confirmed that the patient's neurologic functions were intact. The radiology report from the head CT scan stated there were no facial fractures and the TMJ was intact. The patient presented with upper and lower lip edema with multiple skin abrasions and mucosal lacerations. The interpapillary tissue between teeth #8 and #9 was torn, and moderate gingival swelling was observed between teeth #6-11. Dental clinical examination determined that teeth #8, 9, and 23 were avulsed, #7 and 10 were intrusively luxated more than 7mm, and #24, 25, and 26 were extrusively luxated approximately 3mm. Teeth #8, 9, and 23 were reportedly placed in a balanced salt solution (EMT Toothsaver, Berlin, Germany) provided by the community hospital within an hour of injury. Under local anesthesia, #8, 9 were re-implanted, and #7 and 10 were surgically repositioned and stabilized via a flexible splint (0.012 NiTi). #23 was replanted and stabilized via a flexible splint (0.012 NiTi) as well. The interpapillary tissue between #8 and #9 was approximated with sutures. The patient was placed on a 10-day regimen of oral antibiotics and scheduled for a follow-up at Riley Dental Outpatient Clinic within a week. Information regarding the patient's history of trauma was relayed to his primary dentist. The patient attended follow-up visits at Riley Dental Clinic 1 week, 3 week, 5 weeks, and 7 weeks after his accident. Pulpal extirpation was recommended, and the patient was referred to a local endodontist for treatment. The splint was removed seven weeks post-trauma when a notable decrease in tooth mobility was observed. The patient did not attend a 6-month follow-up evaluation at Riley Dental Clinic.

## RADIOGRAPHS: Before Reimplantation (Upper row) and Post Stabilization Panorex



## CLINICAL PHOTOGRAPHS: Immediate Post Stabilization (Left), 3 weeks (Middle) and 7 weeks (Right)



## Discussion

This patient presented to the Riley Hospital emergency department approximately 5 hours after his injury. While the patient reported that his teeth were placed in a balanced salt solution within an hour of the accident, the prognosis for nerve healing for avulsed teeth #8, 9 and 23 is poor due to the time elapsed after his injury and the closed apices of the teeth involved<sup>3</sup>.

Due to the depth of intrusion of #7 and #10 and the patient's dental age, surgical repositioning was performed<sup>4</sup>. Teeth #24, 25, 26 that were extrusively luxated were splinted along #23. The patient's family was informed that teeth #8, 7, 9, 10 and 23 will need endodontic treatment based on the nature of their respective injuries<sup>3,4</sup>. The patient's family was advised that the overall prognosis of the avulsed and intrusively luxated teeth is guarded, with a risk of root resorption and/or ankylosis<sup>3,4</sup>. The patient was evaluated by an endodontist 5 weeks after injury who recommended root canal therapy on #8, 9 and 23 but the patient did not proceed with treatment at that time. He did not return for a 6-month evaluation. Due to the nature of the patient's injuries and lack of follow-up, the overall prognosis is poor.

## Conclusion

Traumatic dental injuries commonly occur among adolescents<sup>1</sup>. In cases where multiple injuries of an extensive nature occur, timely management and appropriate referral may help improve treatment outcomes. As dental providers it is important to not only treat but educate patients about sequelae after dental trauma. Ultimately it is up to our patients to act upon recommendations for follow-up care.

## References

