

Multidisciplinary Management of Unconventional Incisor Intrusion and Severe Bleeding Control

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Background

The majority of bleeding management recommendations in dental literature are centered around molar extraction sites but do not necessarily take into account the multifactorial nature of acute bleeding episodes in the presence of dental trauma to anterior teeth. Factors which may impede the achievement of hemostasis in the presence of traumatic dental injury are tooth loss or mobility, alveolar fracture, time since trauma, treatment setting, resources available, and underlying medical conditions. According to AAPD guidelines, the recommended management of severe intrusion injury to permanent teeth is surgical or orthodontic repositioning of the affected tooth or teeth. In this case report, surgical repositioning was attempted and excessive prolonged bleeding was encountered. Orthodontic extrusion was then performed on the remaining traumatized tooth.

Case Report

9 year old male presented to CW EDTC with severely intruded maxillary permanent central incisors and significant alveolar fracture. No reported history of bleeding disorders. Patient was discharged to CW dental clinic for after hours trauma management, upon stabilization of his other injuries in the EDTC.

Chronology

Day 0: Acute Treatment and Bleeding Management

Attempted surgical repositioning of #8 in CW Dental Clinic . Upon removing the tooth, significant bleeding appreciated. Sequence of hemostasis measures used:

1. Repositioned the tooth. Applied firm digital pressure with gauze for 20 minutes. Tooth unable to be retained safely, due to lack of residual alveolar bone and excessive bleeding. Removed the tooth, placing it in biologic media and continued to apply firm pressure with gauze for an additional 20 minutes. Bleeding did not subside.
2. Supplemental local anesthetic with epinephrine administered to the site. Continued firm digital pressure. Bleeding continued.
3. Surgicel placed at the affected site. Bleeding continued.
4. Gel Foam placed in the site. Hemostasis was achieved after 30+ minutes of continuous, profuse bleeding.
5. Contacted ED team to discuss bleeding management recommendations and sending patient for overnight admission and monitoring. Tooth maintained in cold milk during overnight hospital stay.

Following trauma dental visit, pre and post op RBC counts were found to be $4.24 \times 10^6/\mu\text{L}$ (pre-op: WNL) and $3.96 \times 10^6/\mu\text{L}$ (post-op; below normal range). No other bleeding diatheses identified.



References

- Bourguignon C, Cohenca N, Lauridsen E, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 1. Fractures and luxations. *Dent Traumatology* 2020;36(4):314-330. <https://doi.org/10.1111/edt.12578>.
- O'Connell, A., & Spadinger, A. (2018). Trauma and Sports Dentistry. In *The Handbook of Pediatric Dentistry* (5th ed., pp. 177–189). essay, American Academy of Pediatric Dentistry.

Day 1: Re-Assessment and Treatment Planning

Patient returned to dental clinic with tooth #8 stored in milk. Dental, orthodontic, and oral surgery providers assessed the patient's condition, bone loss, and trauma site and ultimately determined that attempting re-implantation of #8 was not in the best interest of the patient, without further medical evaluation and long-term prognosis would be poor due to extent of bone loss and time elapsed since tooth was removed. Family elected to abort re-implantation efforts of #8 and proceed with monitoring for spontaneous repositioning of #9 so that RCT could be performed.

Day 21: Cvek Pulpotomy and Protective Restoration of #9

Enough spontaneous re-eruption present to access incisal edge for Cvek Pulpotomy. Continued to monitor for further repositioning to allow endodontic access and orthodontic bonding.

Day 43: Ortho Records Taken to Reposition #9

Orthodontic extrusion needed to allow for endodontic access.

Day 60: Orthodontic Bonding

Day 72 and 101: Initiation and completion of RCT #9

Day 247: Build up #9, impression for interim RPD and orthodontic retie

Day 253: De-bond and Interim RPD Delivery

Future Plans: Patient to resume routine care. Definitive prosthodontic options should be determined once patient has reached the appropriate growth milestones.

Conclusion

Permanent tooth dental trauma in adolescent patients poses a multitude of challenges and problems which must be considered in both the acute trauma management and long-term treatment planning and execution. Patient's overall health must be prioritized over all other factors during initial trauma management but other factors such as long-term function and esthetics are important to consider when addressing traumas to permanent teeth.