Wrong Site Extraction, Reimplantation, and Pulpal Regeneration: A Case Report

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Background

Wrong site surgery and near miss experiences occur in dental education institutions. Although they happen infrequently, any wrong site surgery is one too many. Proper protocols and training can help prevent and reduce the number of these errors. Analysis of wrong tooth extraction data suggests that cognitive failure is one of the most frequent causes, alongside failures in communication and training. Given that oral surgery has been noted to have some of the most serious and irreversible complications in dentistry, there is a real potential for dental students to cause patient harm. These incidents highlight the importance of having established protocols and procedures to prevent such wrong site surgeries.

Case Report

A 9-year-old Hispanic male was referred to the UNLV Advanced Education in Pediatric Dentistry Program after an immature tooth #20 was extracted in error by a dental student who mistook the premolar for tooth #K that was planned for root tip extraction. The student placed tooth #20 into hydrogen peroxide post extraction. Upon recognition of the extracted #20, the supervising faculty member reimplanted the tooth and called a pediatric resident to aid in managing the traumatic event. The tooth was splinted from #19 to #26 with a flexible stainless steel arch wire. (Figure 2). A periapical radiograph was used to confirm placement of the tooth. Amoxicillin was prescribed and it was confirmed that the patient was up to date with their tetanus vaccine. The patient was instructed to return to the Pediatric residency program to initiate endodontic therapy at one week. The tooth was medicated with calcium hydroxide for one month. At the one-month appointment, the apex was observed to be calcifying with continued root formation and development. It was determined that pulpal regeneration would be an appropriate treatment option. Gentle saline irrigation was performed to remove the medicament from the canal of the tooth. The apical tissues were agitated with a hand file to fill the canal with the patient's own blood. Hemostasis was achieved mid root. The coronal half of the canal was filled with MTA and a bonded composite restoration was placed to seal the tooth. The tooth was grade 3 mobile at this appointment. The splint was left in place and the patient was instructed to return in one month. At the one month follow up, the splint was removed, and the tooth was grade 1 mobile. A periapical radiograph showed continued root development, blunting of the root apex and thickening of the root walls. A follow up schedule was implemented according to the AAPD trauma guidelines. The patient was recently seen for a 3 month follow up. A periapical radiograph shows a blunted apex, continued thickening of the root walls and a tooth that is in infraocclusion.

Discussion

The decision to initiate endodontic therapy was made due to the tooth being placed in a storage medium that is caustic to PDL and pulp cells. Known outcomes of avulsed permanent teeth are replacement resorption (ankylosis), external resorption, and pulpal necrosis. Due to an unfavorable environment after the removal of the tooth, it was determined endodontic therapy was warranted. When the tooth was accessed, the heme was cyanotic and sluggish indicating irreversible pulpitis. The goal of maintaining this tooth is to maintain bone height and width, arch length , esthetics, and function. The patient and parent were informed that the tooth is at risk for endodontic or periodontal failure and will need future treatment which may include: a bonded full coverage restoration to restore the occlusal plane or extraction and prosthodontic replacement and periodontal therapy.


Figure 1

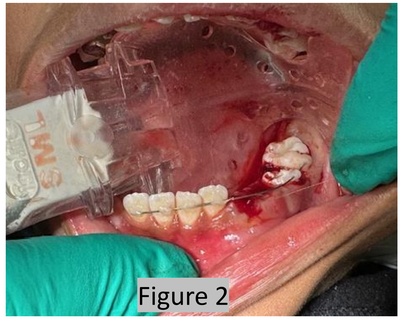
Figure 2

Conclusion

Wrong site surgeries in an educational setting are an unfortunate occurrence. Pre-operative time outs, tooth identification and marking, a trained assistant and increased education and experience can help reduce the incidence of these events. Traumatic dental injuries require a timely, accurate and evidence-based response to improve patient outcomes. Emphasis should be placed on frequent follow-up and patient compliance. Pediatric patients and their guardians should be informed of potential sequelae and long-term complications associated with a traumatic injury.


Figure 3


Figure 4


Figure 5

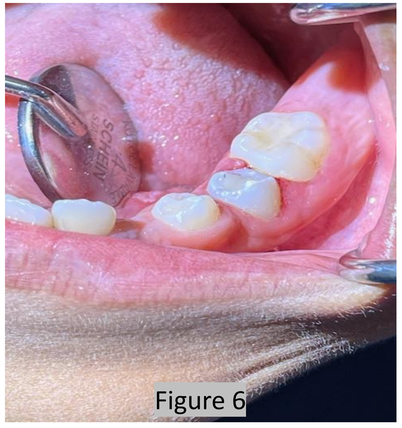
Figure 6


Figure 7

Figures

1. Day of reimplantation PA
2. Day of reimplantation
3. 1 week open and medicate
4. Post-op (MTA placement)
5. 1 month follow up
6. 3 month follow up
7. 3 month follow up PA

References:

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