

Replantation of an avulsed tooth lost due to domestic violence: A case report

Loto A.O., Enone L.L., Oyapero A., Awotile A.O.

ABSTRACT

Introduction: Tooth avulsion is the total displacement of a tooth from its socket due to inadvertent or non-accidental injury. The risk factors for traumatic dental injuries include aggression and violent attitudes and this must always be considered bearing in mind that the assault could be due to domestic violence. The present case report describes the management of a case of traumatic dental injury due to spousal abuse. **Case Report:** This case report describes the replantation of a tooth in a 30-year-old trader presented at the Conservative Dentistry Clinic of the Lagos State University Teaching Hospital, Ikeja (LASUTH) with complaints of an avulsed tooth, mobile anterior teeth, pain and discomfort of a day duration. This occurred following a misunderstanding with her husband in which she was slapped on the face. The avulsed tooth was, however, not stored in any medium but was wrapped in a paper and was brought to the clinic. Root canal therapy was then carried out extra orally on avulsed 11 and the root filled tooth was placed in 2.4% sodium fluoride solution for 20 minutes after which it was re-implanted into the socket and splinted. Appropriate steps were also taken to counsel the patient and her spouse.

Conclusion: Dental practice protocols are needed to provide dental professionals with the needed skills to recognize, document, and report abuse, and to refer patients for needed help. In addition, to increase public awareness through mass media campaigns, health professionals and the general public should receive information on how to proceed following these severe unexpected injuries.

Keywords: Assault, Domestic abuse, Tooth Avulsion, Tooth re-implantation

How to cite this article

Loto AO, Enone LL, Oyapero A, Awotile AO. Replantation of an avulsed tooth lost due to domestic violence: A case report. J Case Rep Images Dent 2016;2:23–27.

Article ID: 100008Z07LO2016

doi:10.5348/Z07-2016-8-CR-6

Loto AO¹, Enone LL¹, Oyapero A², Awotile AO¹

Affiliations: ¹Department of Restorative Dentistry, Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria; ²Department of Preventive Dentistry, Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria.

Corresponding Author: Dr. Oyapero A., Department of Preventive Dentistry, Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria; Email: fola_ba@yahoo.com

Received: 10 February 2016
Accepted: 01 April 2016
Published: 27 April 2016

INTRODUCTION

Tooth avulsion is the total displacement of a tooth from its socket due to inadvertent or non-accidental injury. It occurs in 1–16% of all dental injuries and could cause the loss of healthy teeth [1, 2]. Dental injuries especially avulsion of a tooth is a disturbing event, often resulting in psychological as well as physical problems, since it commonly involves the anterior teeth which are visible when the mouth is open. Andreasen and Andreasen [3] observed that 10% of the population have experienced some form of dental trauma, of which 0.5–16% were cases

of avulsion of permanent teeth. Facial aesthetics play a central role in self-identification, self-image, and social confidence. The risk factors for traumatic dental injuries include aggression and violent attitudes and this must always be considered bearing in mind that the assault could be due to domestic violence [4]. Domestic violence or abuse is a pattern of offensive behavior by one or both partners in an intimate relationship. Research shows that most bodily harms resulting from family violence are found on the head and neck regions, areas that are plainly visible to the dental team during examinations [5, 6].

The traumatic avulsion of a tooth from its socket results in the breakdown of the periodontal ligament cells and the blood supply to the pulpal tissues. It is one of the emergency situations in dentistry that requires an urgent response. Prompt and satisfactory management of dental trauma is essential for acceptable outcomes particularly in cases of tooth avulsion [7, 8]. Since the permanent loss of an avulsed tooth has both functional and psychological consequences, teeth should be preferably replanted in the alveolus immediately, or transported using a suitable medium and then replanted at a dental clinic. The choice and the prognosis of treatment of the tooth is, however, dependent on a number of factors which include the time of presentation of the patient in the clinic, the transport medium for the tooth, the viability of the periodontal ligament cells and the maturity of the root. The present case report describes the management of a case of traumatic dental injury due to spousal abuse.

CASE REPORT

A 30-year-old trader presented at the Conservative Dentistry Clinic of the Lagos State University Teaching Hospital, Ikeja (LASUTH) with complaints of an avulsed tooth, mobile anterior teeth, pain and discomfort of a day duration. This occurred following a misunderstanding with her husband in which she was slapped on the face. This occurred less than 24 hours prior to presentation. There was associated pain and bleeding from the surrounding soft tissues. The pain was sharp, radiated across the upper side of her lip and jaw and was associated with headache. The patient, however, claimed that this was the first time she was hit by her husband. She was taken to a nearby hospital where she was placed on analgesics and antibiotics. The avulsed tooth was, however, not stored in any medium but was wrapped in a piece of paper and was brought to the clinic. It was the patient’s first dental visit and she had no history of any underlined medical condition or known drug allergies.

On examination, the patient was in obvious emotional distress, not pale, anicteric and there was no obvious facial asymmetry. Her left eye appeared slightly erythematous circumorbitally but there was no associated visual impairment from both eyes while the lips were slightly swollen but competent. Both submandibular lymph nodes were palpable, but non-tender nor enlarged. Both

TMJs were palpable, moved synchronously, non-tender, without clicking sounds or crepitus. Intra orally, there was no limitation in mouth opening but there were minute bruises with areas of ecchymosis on labial mucosa of the upper lip and left buccal mucosa which was slightly tender on palpation. 11 were avulsed and the alveolar socket was filled with clotted blood with no sign of infection. The oral Hygiene was good. (OHI-Score = 1.1). 12 and 21 were palatally displaced and had grade 2 mobility. The patient however had no carious or filled teeth.

Teeth present:	8 7 6 5 4 3 2	1 2 3 4 5 6 7 8
	8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8

Periapical radiographs revealed an empty alveolar socket of 11 and slightly extruded 12 and 21. There was no evidence of root or alveolar bone fracture. A diagnosis of avulsion of 11 and luxation injury to tooth 12 and 21 secondary to physical assault was made. A problem list of emotional trauma, tooth pain and poor aesthetics was made and the treatment objectives were to give emotional support, improve aesthetics and to restore function. Treatment plan was drawn up which involved counseling of patient and her husband, taking clinical photographs and making study models. This was followed by the definitive restorative treatment.

The definitive restorative treatment included an oral health education session, dietary counseling and an oral hygiene maintenance program. She was educated and motivated in oral hygiene maintenance. Root canal therapy was then carried out extra orally on avulsed 11 and the root filled tooth was placed in 2.4% sodium fluoride solution for 20 minutes. The alveolar socket was copiously irrigated with normal saline under local anesthesia and the avulsed tooth was re-implanted into the socket. The luxated 12 and 21 were repositioned and splinted using 0.5 mm ligature wire and a light cured hybrid composite. The composite splinting was extended from 31–23. Affected teeth were relieved from occlusion using a tapered diamond bur on a fast hand piece cooled with water. Postoperative instructions were given to the patient on warm saline mouth rinses 6–8 times daily and soft diet intake. She was placed on analgesics for three days. The composite splint was in place initially for two weeks and then for an extra week because the replanted tooth was still slightly mobile. The patient had regular reviews weekly for the first month and subsequently monthly for the next two months. Clinical photographs and periapical radiographs were taken at each recall. She adhered to her postoperative instructions and she had no episode of pain, infection or any other complication. Radiographic review at third month showed there was no evidence of internal or external root resorption. At sixth month follow-up, there was no evidence of periodontal destruction and the follow-up radiograph did not show any sign of root resorption or ankylosis on the involved

teeth (Figures 1 and 2). An informed written consent was also obtained from the patient for publication of the case.

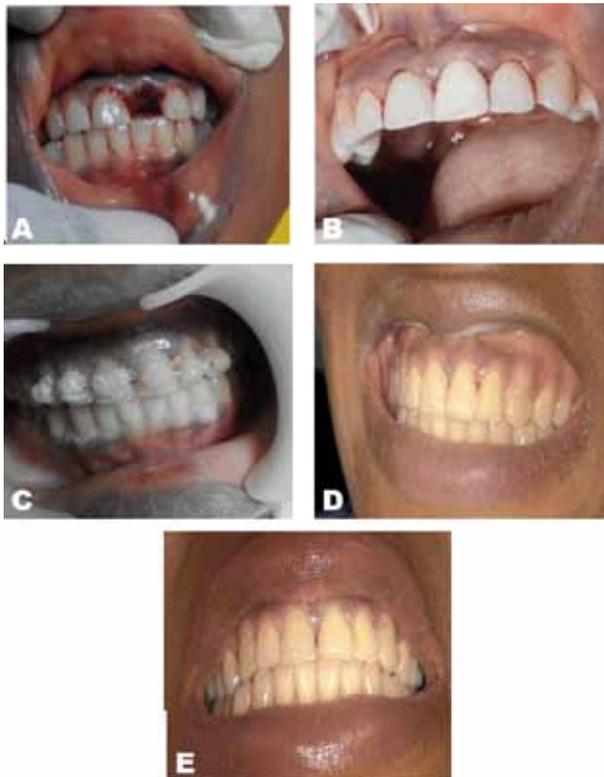


Figure 1: (A) Preoperative picture showing avulsion of 11, (B) Insertion of 11 into the alveolus after completion of root canal treatment, (C) Composite splinting of 11 with 0.5 mm ligature wire, (D) Patient at third month postoperative review, (E) Follow-up at sixth month.



Figure 2: (A) Postoperative radiograph after root canal treatment and splinting of 11, (B) After the removal of the composite splint and ligature wire, (C) Follow-up radiograph at sixth month.

DISCUSSION

Avulsion of permanent teeth is seen in about 0.5-3% of all dental injuries [9, 10]. An avulsed permanent tooth is one of the few emergency situations in dentistry. Dentists are among the most trusted health professionals, and patients feel comfortable communicating with them. This trust increases as dentists communicate with compassion and empathy [11]. Dentists must evaluate their patients on entry into the office by observing their posture, appearance, communication and their facial mannerism [12]. A comprehensive dental history and careful examination can also provide information about the mechanism of the patient's injury and reveal cases of domestic violence. Domestic violence is a pattern of abusive behaviour in any relationship that is used by one partner to gain or maintain power and control over another intimate partner. Facial injuries are a common presentation for victims of domestic violence. It has been estimated that about 65–75% of abuse involves trauma to the head and neck region [13]. In one case series, 81% of domestic abuse victims had facial injuries while 30% of them had maxillofacial fractures. In another case series of 218 female domestic abuse victims who were treated at a hospital emergency department, the most common injuries were bruises (70%), while the most common site of injury was the face (68%) [14]. The site of the injury was also consistent with physical attack using the hand or fist because most of the victims had left-sided injuries [15, 16].

Dentists have a duty to recognize signs of domestic violence, and to report those signs to the relevant authorities. They are, however, the least likely of all clinicians to suspect and intervene in family violence, even though injuries to the head and neck are very prevalent in abuse cases. The well-being of the patient is of primary importance and if the patient is believed to be in present danger, the police should be notified at once. However, if the dentist recognizes an abusive relationship in a rational patient who refuses mediation, this creates an ethical quandary [17]. In the present case report, no significant history of previous abuse and injuries was elicited from the patient and her partner and no significant risk for future abuse was determined. Notification of social workers in LASUTH was done and a detailed counseling was done with an extraction of verbal and written promise from the husband that he will not assault her again. This position was reviewed thoroughly with the couple subsequently at every follow-up visit along with the clinical review of her restored dentition.

Treatment of avulsed teeth consists of the emergency treatment that should be provided as soon as possible after the event and the definitive treatment based on a clinical and radiographic follow-up examination. The length of time the tooth stays out of the socket and storage process plays a critical role in the management of the patient. Clinical and experimental investigations have shown that even when teeth were replanted after

five minutes out of the alveolus, only 73% had normal periodontal tissues at review. Fully developed teeth that have been out of the mouth 1 hour or less or teeth stored in a biological medium should be treated carefully to avoid further damage to the root surface and remaining periodontal ligament tissues. The tooth should be held by the crown, irrigated with sterile saline, and replanted with a gentle digital pressure [18]. Teeth with a partial root development should, however, be soaked in doxycycline for five minutes before replantation.

If replantation was delayed for 10 minutes, satisfactory healing was observed in only 50% of cases [19]. The maintenance of viable periodontal ligament cells on root surface is thus crucial to favorable outcome. Hanks Balanced Salt Solution (HBSS) is the ideal transport medium but it is not readily available. Milk is a practical, relatively bacterial free alternative that can preserve the vitality of the periodontal ligament cells due to its osmolality. Even though the tooth in the index case was still firm after six months with no evidence of resorption, long-term follow-up is still indicated due to the way in which the tooth was transported and the length of time it had stayed outside the mouth [20].

CONCLUSION

Dental practice protocols are needed to provide dental professionals with the needed skills to recognize, document, and report abuse, and to refer patients for needed help. A suitable emergency management and treatment plan are important for a good prognosis in dental avulsion injuries. The success of the treatment depends on the viability of the periodontal ligament cells at presentation, the storage medium for the tooth and the treatment protocol adopted by the attending clinician. Adherence to standard treatment guidelines based on current evidence will result in appropriate treatment outcomes.

Author Contributions

Loto A.O. – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Enone L.L. – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Oyapero A. – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Awotile A.O. – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

Copyright

© 2016 Loto A.O. et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

REFERENCES

- Petersson EE, Andersson L, Sörensen S. Traumatic oral vs non-oral injuries. *Swed Dent J* 1997;21(1-2):55–68.
- Glendor U, Marcenes W, Andreasen JO. Classification, Epidemiology and Etiology. Andreasen JO, Andreasen FM, Andersson L eds. Textbook and Color Atlas of Traumatic Injuries to the Teeth. 4ed. Oxford: Blackwell/Munksgaard; 2007 p. 217–54.
- Andreasen JO. Response of oral tissue to trauma. In: Andreasen JO, Andreasen FM eds. Textbook and Color Atlas of Traumatic Injuries to the Teeth. 3ed. Copenhagen: Munksgaard; 1993. p. 77–112.
- Soriano EP, Caldas Jr AF, Carvalho MVD, Amorim Filho HA. Occurrence and risk factors related to traumatic dental injuries in Brazilian schoolchildren. *Dent Traumatol* 2007;23:232–40.
- Tilden VP, Schmidt TA, Limandri BJ, Chiodo GT, Garland MJ, Loveless PA. Factors that influence clinicians' assessment and management of family violence. *Am J Public Health* 1994 Apr;84(4):628–33.
- Cairns AM, Mok JY, Welbury RR. Injuries to the head, face, mouth and neck in physically abused children in a community setting. *Int J Paediatr Dent* 2005 Sep;15(5):310–8.
- Gottrup E, Storgård Jensen S, Andreasen JO. Wound Healing Subsequent to Injury. In: Andreasen JO, Andreasen FM, Andersson L eds. Textbook and Color Atlas of Traumatic Injuries to the Teeth. 4ed. Oxford, England: Wiley-Blackwell; 2007. p. 1–44.
- Andreasen JO, Andreasen FM, Skeie A, Hjørting-Hansen E, Schwartz O. Effect of treatment delay upon pulp and periodontal healing of traumatic dental injuries – a review article. *Dent Traumatol* 2002;18(3):116–28.
- Glendor U, Halling A, Andersson L, Eilert-Petersson E. Incidence of traumatic tooth injuries in children and adolescents in the county of Västmanland, Sweden. *Swed Dent J* 1996;20(1-2):15–28.
- Andreasen JO, Andreasen FM. Avulsions. In: Andreasen JO, Andreasen FM, Andreasen L eds. Textbook and colour atlas of traumatic injuries to the teeth. 4ed. Oxford, UK: Wiley Blackwell; 2007. p. 444–488.
- Epstein RM. Virtual physicians, Virtual physicians, health systems, and the healing relationship. *J Gen Intern Med* 2003 May;18(5):404–6.

12. Ochs HA, Neuenschwander MC, Dodson TB. Are head, neck and facial injuries markers of domestic violence? *J Am Dent Assoc* 1996 Jun;127(6):757–61.
13. Gutmann ME, Solomon ES. Family violence content in dental hygiene curricula: a national survey. *J Dent Educ* 2002 Sep;66(9):999–1005.
14. Berrios DC, Grady D. Domestic violence. Risk factors and outcomes. *West J Med* 1991 Aug;155(2):133–5.
15. Le BT, Dierks EJ, Ueeck BA, et al. Maxillofacial injuries associated with domestic violence. *J Oral Maxillofac Surg* 2001 Nov;59(11):1277–83; discussion 1283–4.
16. Arosarena OA, Fritsch TA, Hsueh Y, Aynehchi B, Haug R. Maxillofacial injuries and violence against women. *Arch Facial Plast Surg* 2009 Jan-Feb;11(1):48–52.
17. Wiseman M. The role of the dentist in recognizing elder abuse. *J Can Dent Assoc* 2008 Oct;74(8):715–20.
18. Flores MT, Andreasen JO, Bakland LK, et al. Guidelines for the evaluation and management of traumatic dental injuries. *Dent Traumatol* 2001 Aug;17(4):145–8.
19. Emerich K, Wyszowski J. Clinical practice: dental trauma. *Eur J Pediatr* 2010 Sep;169(9):1045–50.
20. Andersson L, Andreasen JO, Day P, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 2. Avulsion of permanent teeth. *Dent Traumatol* 2012 Apr;28(2):88–96.

Access full text article on
other devices



Access PDF of article on
other devices

