

AWARENESS ABOUT MANAGEMENT OF TOOTH AVULSION AMONG GENERAL DENTAL PRACTITIONERS: A QUESTIONNAIRE BASED STUDY

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ABSTRACT

Tooth Avulsion is a frequently encountered dental emergency. General dental practitioners (GDPs) have the duty of managing these traumatic injuries along with evaluating the prognosis and outcome. The purpose of this study was to explore the knowledge and favored methods of GDPs concerning the management of avulsed tooth. This study included 248 general dental practitioners who replied to a questionnaire covering 09 questions assessing the awareness regarding the treatment of avulsed teeth, which was circulated in various hospitals of Islamabad. Data were expressed in terms of percentages.

A total of 250 questionnaires were distributed and 248 dentists responded. A vast majority (97%) of clinicians were aware that the avulsed tooth should be saved with 98% having previous knowledge of management of an avulsed tooth. Sixty two percent of clinicians were aware of the ideal transport medium for an avulsed tooth however, 72% were naive about the critical time for replantation. Sixty seven percent of the dentists had the knowledge of the multiple factors accountable for the consequences of tooth replantation. Most of the general dental practitioners are well aware and equipped with the necessary information but improvement is still needed in certain aspects for effective management of the avulsed tooth.

Keywords: *Tooth Avulsion; Tooth Replantation; Tooth injuries; Dental General Practice*

INTRODUCTION

Traumatic injuries are frequently encountered dental emergencies with a prevalence of 10% of the population having experienced dental trauma ranging from minor concussions to extensive dento-alveolar damage leading to avulsion of tooth. Avulsion is described as the total displacement of an intact tooth out of its socket. It is one of the most grave dental injuries accounting for 16% of dental trauma cases. Falls, sports, crashes, physical leisure activities, assault, being hit by an object, traffic accidents and not wearing protective headgear during recreational activities are the major causes of dental trauma. The most predisposed teeth to avulsion injuries are the permanent anterior teeth.³ Maxillary incisors are not only indispensable for aesthetics but also play a major role in communication, phonetics, mastication and psychological and mental health of an individual. Therefore it is crucial to immediately replant the avulsed permanent anterior teeth to preserve patient's self-esteem and functionality."

There are three vital factors responsible for a pos-

itive prognosis in case of an avulsed tooth; extra-oral time, storage media, root development and handling¹. To prevent permanent damage to the periodontal ligament and thus ensuring a favorable outcome, an avulsed tooth should be replanted in its socket at the earliest opportunity. The replanted tooth will be lost over time if it is stored dry causing irreparable damage to the periodontal membrane. Nevertheless, using water as a storage medium is not suggested as its osmolality is too low. The tooth may be stored in saline, patient's own saliva or milk; however, Hanks balanced salt solution is the preferred storage medium. Replantation of avulsed primary teeth is not endorsed as that may damage the permanent successor.

It is the general dental practitioner who is often required to provide instant treatment to patients with dental trauma. Awareness of the vital measures to take after an accident is essential in ensuring a favorable outcome for the avulsed and replanted tooth. Several studies have been carried out in various other countries to evaluate the information oral health professionals have on the emergency management of avulsed tooth and their general awareness has been found lacking and in need of improvement. The purpose of this study was therefore to evaluate and compare, through a questionnaire, the knowledge and attitude of dental professionals in Islamabad towards emergency treatment for avulsion.

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MATERIALS AND METHODS

This study was carried out on 248 general dentists employed in various teaching hospitals in Islamabad with the help of a specially prepared questionnaire adapted from the study of Mohammad Mustafa¹. Ethical approval for this study was taken from the ethical approval committee, Rawal Institute of Health Sciences, Islamabad. A total of 248 GDPs consented to take part in the study and returned the questionnaires. It consisted of 9 closed-ended questions on tooth avulsion intended to judge the awareness of the participants as regards to its immediate management, critical extra-alveolar time, ideal medium for storage, appropriate cleaning method of a grossly soiled avulsed tooth before replantation, its correct handling and the splinting technique and time required. Data were expressed in terms of percentages.

RESULTS

A total of 248 general dental practitioners responded to the questionnaire. Almost all of the dentists (97%) were aware of the fact that the avulsed tooth should be saved, with 98% claiming to have the knowledge about the management of avulsion. It is very encouraging to see that 93% practitioners knew the importance of a gentle rinse of the root surface under running tap water to rid it of any dirt and impurity, while only 4% were unsure about the correct protocol. Sixty two percent have the knowledge that the ideal storage solution for a displaced tooth is Hanks balanced salt solution. Only 4% of the dentists were uninformed that the tooth had to be replanted in the same socket from which it came but majority of the GDPs (72%) did not have the knowledge that 60 minutes is the critical time for replantation. Many factors affect the result of the tooth replantation and 67% of the dentists were aware of these factors. Seventy three percent of the clinicians were conscious that a splinting time of 15 days is required, however only 44% knew that a stainless steel wire and composite splint is preferred (Table 1).

DISCUSSION

In this study 97% of the clinicians were aware of the fact that an avulsed tooth can be saved which is a higher percentage than reported by Mustafa (73%) in his study carried out in Alkharj City of Saudi Arabia.¹ An even lesser percentage of practitioners (18.5%) in Benin City of Nigeria were aware that an avulsed tooth can be replanted. An overwhelming majority of the dental practitioners (98%) in Islamabad were having the necessary information regarding the management of avulsion as compared to 52.5% in Jeddah, 19.2% in cities of U.A.E and 41.3% in Biratnagar, Nepal. This could be due to the emphasis placed on education regarding the prevention, recognition and dealing with dental trauma at undergraduate and post graduate training programs in Pakistan as compared to some other countries.

A clear understanding of cleaning a knocked out contaminated avulsed tooth with water was evident

as 93% of the clinicians in our study chose that option which is in accordance with studies carried out in India and Malaysia with 87% and 84% dentists electing to wash the tooth before replantation respectively.¹⁷ On the contrary, only 33.3% of the clinicians from Ulosoy's study and 48.4% of dentists from Bahammam's study were likely to wash the dirt covered tooth.¹⁹

A significant difference observed between Saudi dentists and the dentists residing in Islamabad was the response to the replantation of the tooth into its own socket. A vast majority (96%) of the clinicians in our study gave an affirmative answer which was in contrast to the 69% seen in a study carried out by Mustafa.¹

A chief factor for a favorable prognosis after avulsion is Extra-oral time. According to treatment guidelines all periodontal ligament fibers become non-viable if the extra-oral dry time of a tooth surpasses 60 minutes.¹⁶ The result from our study was quite disappointing as only 28% of the respondents knew that 60 minutes was the critical time for survival of the tooth after replantation. A similar result was reported by Abdullah with just 16% of the practitioners having the correct knowledge.²³ However, 61.9% of the respondents in Enabulele and Omo's study knew the correct critical time for an avulsed tooth.¹⁸

The temporary storage solution employed during the wait before the avulsed tooth can be replanted is critical for successful replantation as it preserves the vitality of the PDL fibers that persist on the surface of the root. Although Saline has a favorable pH and physiological osmolality, it lacks the necessary ions and glucose which are essential for the survival of PDL cells. The majority of dentists from Malaysia and almost 60% from India picked saline as their preferred storage medium, however only 5% of dentists from this study went for that option.^{17,23} They selected Hank's Balanced Salt Solution (HBSS) which has been specifically created for better tissue conservation for extended time periods. Along with the storage medium and extra-oral dry time, another factor that has an essential role in a successful replantation outcome is the amount of injury sustained by the periodontal ligament cells and the integrity of the remaining cells. Sixty seven percent of the participants in this study were aware that all these three elements are important as compared to 89.4% from the study carried out by Aljazairy.

After replantation, an avulsed tooth with no evidence of bony fractures should be flexibly splinted for two weeks as a prolonged rigid splint may lead to ankylosis. It was disappointing to note that only 44% of the practitioners in our study selected a stainless steel wire splint. Comparable observations were seen in the researches by Abdullah in which 52% of the dentists stated that they would employ a rigid splint.²³ A splinting duration of 15 days was appropriately chosen by 73% of the dentists which is a much better statistic than the Alkharj study where 39% of the practitioners recognized that a stainless steel wire splint was indicated for two weeks.¹ Likewise, 58.6% of the dentists

TABLE 1: SHOWING THE PERCENTAGE RESPONSES OF THE GENERAL DENTAL PRACTITIONERS TO THE QUESTIONNAIRES RELATED TO DENTAL AVULSION.

S.No.	Question	%
Q 1.	What will you do if you have found a patient with avulsed tooth outside the oral cavity?	
	a. Save.	97%
	b. Discard.	3%
	c. Don't know what to do.	0%
Q 2.	Do you have information of the management of avulsed tooth?	
	a. Yes.	98%
	b. No.	2%
Q 3.	What would you do if the avulsed tooth was covered with dirt?	
	a. Rinse with tap water.	93%
	b. Would do nothing.	2%
	c. Scrub with soap.	1%
	d. Not sure.	4%
Q 4.	According to you what is the best storage medium for an avulsed tooth?	
	a. Hanks balanced salt solution.	62%
	b. Milk.	16%
	c. Saliva.	17%
	d. Saline solution.	5%
Q 5.	Would you prefer the replantation of the tooth into the socket from which it came?	
	a. Yes.	96%
	b. No.	4%
Q 6.	Which is the critical time for the replantation of the avulsed tooth?	
	a. Less than 30 min.	61%
	b. Less than 60 min.	28%
	c. Less than 90 min.	9%
	d. More than 90 min.	2%
Q 7.	Factors influencing the outcome of the replantation?	
	a. Storage medium.	
	b. Extra-alveolar time period.	13%
	c. Amount of the loss of periodontal ligaments.	15%
	d. All of the above.	5%
Q 8.	Which method of splinting after replantation will you prefer?	67%
	a. Stainless steel wire.	44%
	b. Semi-rigid with nylon wire.	37%
	c. Composite restorative materials.	16%
	d. No splinting.	3%
Q 9.	Splinting time necessary?	
	a. 15 days.	73%
	b. 30 days.	24%
	c. 60 days.	3%

gave incorrect answers regarding splinting in a study carried out in the University of Cagliari, Italy.

Overall, the general dental practitioners working in Islamabad had a much better understanding and a more thorough knowledge of the emergency management of tooth avulsion as opposed to the dentists working in cities from Saudi Arabia, Malaysia, U.A.E, Nepal and India. Not only is this a testament to the attention given to traumatology in teaching hospitals across Pakistan but also the large number of dental trauma cases being treated at these institutions which keeps the clinicians abreast with the latest guidelines and recommended protocols for management.

CONCLUSION

It was concluded that majority of the general dentists in Islamabad are well informed but improvement is still needed in certain aspects for effective management of tooth avulsion.

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| 1 Sadaf Amjad: | Conception and Design, Drafting of Manuscript. |
| 2 Nouman Noor: | Critical Revision. |
| 3 Sidrah Inamulhaq Mughal: | Collection of Data. |