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Awareness about Management of Tooth Avulsion among Dentists in Jazan, Saudi Arabia

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Keywords: Dental trauma; Tooth avulsion; Knowledge; Awareness; Management

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Abstract

AIM: This study aimed to evaluate the awareness amongst dentists working in Jazan, a city in K.S.A., about their potential role in the treatment of traumatic tooth avulsion injuries.

MATERIAL AND METHODS: A cross-sectional study was performed and all dentists in Jazan, K.S.A. were invited to participate in this study. Data was collected through a self-administrated questionnaire. A total of 200 dental practitioners answered the questionnaire. The intern/general practitioners were 75%, and the specialists were 25%. The variables comprised socio-demographic information, professional characteristics and information regarding the awareness towards the management of tooth avulsion.

RESULTS: A total of 200 dental practitioners answered the questionnaire. The intern/general practitioners were 75%, and the specialists were 25%. (44.3%) were aware of the critical time for avulsed tooth replantation while 71.8% of females did not know about the critical time for avulsed tooth replantation. 50.0% of the specialists reported that less than 30 min was needed for avulsed tooth replantation, while 59.3% of interns/general dentists advised less than 60 minutes.

CONCLUSION: A statistically significant result was observed regarding the best storage medium, a critical time for avulsed tooth replantation and tooth management before replantation.

Introduction

Majority of dental injuries occur from 8 to 11 years is due to the falling accidental [1] [2]. Twenty-five per cent of all school children experience dental trauma, and 33% of adult have experience trauma to the permanent dentition. Anterior teeth are not only important for an aesthetic reason but are also necessary for mastication, phonetics, the integrity of supporting tissues, the psychological and mental well-being of youngsters [3].

Tooth avulsion is the complete displacement of a tooth from its socket due to accidental or non-accidental injury [4]. Several studies have investigated the awareness of avulsed teeth in children among parents, and dentists, and have recommended the necessity of learning methods of management to enhance the prognosis of avulsed teeth [2, 5-7]. The prognosis of an avulsed tooth relies on three important factors; extra-oral time, storage media and root development [3].

Avulsion presents a challenge with regards to its proper emergency management [5] [6] [7] [8] [9]. Clinical outcome of the avulsed tooth is unduly compromised if adequate emergency treatment is not followed [9]. When a traumatic dental injury occurs, the patient expects competent treatment from the dental practitioners [9].

Dentists are required to manage traumatic dental injuries in children. Many studies have shown that there is insufficient knowledge regarding the immediate management of patients with traumatic dental injuries [3]. This particular study was planned to explore the awareness of the dental professionals (in Jazan region) about the management of an avulsed

tooth/teeth.

This study aimed to evaluate the awareness amongst dentists working in Jazan, a city in K.S.A., about their potential role in the treatment of traumatic tooth avulsion injuries.

Material and Methods

A cross-sectional study was performed in Jazan, a medium-sized city in the southern region of K.S.A. All dentists (interns, general practitioners and specialists) were invited to participate in this study. Data was collected through a self-administrated questionnaire (Table 1).

Table 1: Questionnaire used in the study

	Gender: Male Female
	Level of Specialization: Intern GP (BDS)
	Speciality: Oral Surgeon Prosthodontics Orthodontist Periodontist Pedodontist Restorative (Operative Endodontist) Public health
	Years of experiences: <5yrs 5-10 yrs. >10 yrs.
	Working place**: Private: Governmental:**
Q1.	What will you do if you have found patient with avulsed tooth outside the oral cavity?
	a. Save the tooth
	b. Discard the tooth
	c. Don't know what to do.
Q2.	Do you have information on the management of avulsed tooth?
	a. Yes.
	b. No.
Q3.	What would you do if the avulsed tooth was covered with dirt?
	a. Rinse with tap water.
	b. Would do nothing.
	c. Scrub with soap.
	d. Not sure.
Q4.	According to you which are the best storage medium for the storage of the avulsed tooth?
	a. Hanks balanced salt solution.
	b. Milk.
	c. Saliva.
	d. Saline solution.
Q5.	Would you prefer the replantation of the tooth into the socket from which it came?
	a. Yes.
	b. No.
Q6.	Which is the critical time for the replantation of the avulsed tooth?
	a. Less than 30 min.
	b. Less than 60 min.
	c. Less than 90 min.
	d. More than 90 min.
Q7.	Factors influencing the outcome of the replantation?
	a. Storage medium.
	b. Extra-alveolar period.
	c. Amount of the loss of periodontal ligaments.
	d. All of the above.
Q8.	Which method of splinting after replantation will you prefer?
	a. Stainless steel wire.
	b. Semi-rigid with nylon wire.
	c. Composite restorative materials.
	d. No splinting.
Q9.	Splinting time necessary?
	a. 15 days.
	b. 30 days.
	c. 60 days.
Q10.	Which type of the tooth do you think intended for replantation after avulsion?
	a. Deciduae.
	b. Permanent.
	c. Both.

The variables in the questionnaire comprised of socio-demographic information (gender, age and nationality), professional characteristics (years of experience, level of specialisation and working place and overseas fellowship), and information regarding the awareness about the management of avulsed tooth.

The questionnaire was distributed to the participants, and an explanation was given to each subject about the importance of their participation and the study purposes.

The statically analysis was performed using Statistical Package for Social Sciences version 21 (SPSS, Illinois, Chicago, USA). Descriptive analysis was carried out by mean of Chi-square test to evaluate association existing between time since graduation and post-graduation training. The significance level was set at $P<0.05$.

Results

All participants were well aware of the management of an avulsed tooth. Total of 200 dental practitioners had answered the questionnaires, 39% were females, and 61% were males. The mean age of the study participants was between 24–66 years, the general dentists 75% and specialists 25% (different specialities). The dentists' demographic parameters are shown in Figure 1.

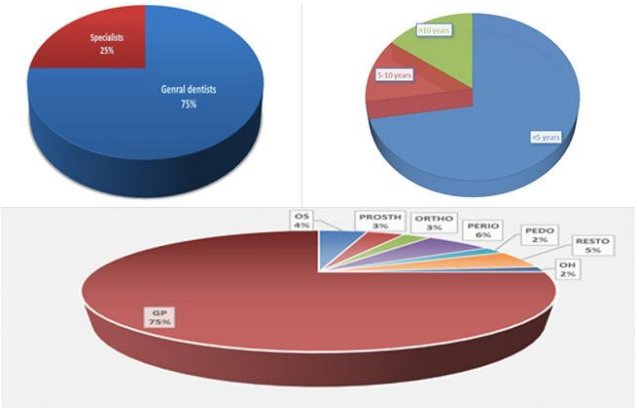

Figure 1: Demographic parameters of the sample study

There was a significant difference between the genders regarding the critical, required time for avulsed tooth replantation (44.3%) were aware of the critical time while many of female (71.8%) were not knowing about the time for avulsed tooth replantation (Figure 2).

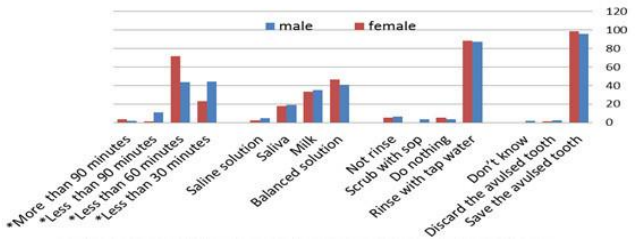

Figure 2: Comparison (Descriptive study) between male and female subjects

Half (50.0%) of specialists reported that less than 30 min is needed for the critical time for avulsed tooth replantation, while 59.3% of interns/G. Dentist advised less than 60 minutes. The difference was statistically significant regarding this point.

Regarding the best storage medium for transport of the tooth to the dentist, there was a significant difference between the specialists and G. practitioner. 50% of specialists were aware of the ideal solution to keep the avulsed tooth, Hanks balanced salt solution, but only 40% of general practitioners know that (Figure 3).

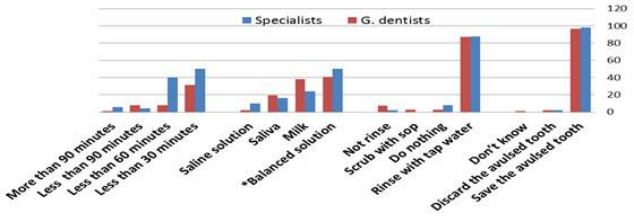

Figure 3: Comparison (Descriptive study) between specialists and G.Dentists

The percentage of specialists who think that we should hold the crown and wash with a physiological solution in tooth management before replantation was 66%, while 51.3% of general dentist think the same.

Discussion

This survey provided baseline information about the existing level of Awareness on the management of avulsed tooth among dentists working in Jazan, K.S.A.

The guidelines for the management of dental trauma published by the International Association for Dental Traumatology (IADT) and the American Academy of Pediatric Dentistry (AAPD) recommend the immediate replantation of a tooth to obtain the best prognosis. If the tooth cannot be replanted within 5minutes, it should be stored in a medium that will help maintain the vitality of the periodontal ligament fibers [2] [10] IADT and AAPD guidelines for the management of dental trauma state that the physiological transportation media for avulsed teeth include Hank's Balanced Salt Solution (tissue culture medium), saline, and cold milk [2] [11] [12].

In the present study, 50% of the dental specialist's participants suggested a balanced solution as the best transportation medium for avulsed teeth. 60% of the general dentist participants had no prior knowledge of the balanced solution. Also, the general dentist's participants preferred milk or saliva as storage media, indicating that they know milk and saliva are the most practical transport mediums for the storage of avulsed teeth because pH and osmolality of them are similar to those of extracellular fluid.

Andreason et al., [13] favour's milk as a storage medium as it maintains the vitality of periodontal ligament cells for up to 3 hours. The osmolality of milk is 232 most/l [14]. It has shown that milk can maintain the osmotic pressure of periodontal ligament cells, but cannot reconstitute cell metabolites and restore viability [8] [13] [15]. However, while milk may not be readily available at the site of trauma, storage of the avulsed tooth in milk at room temperature has been reported to preserve the viability of PDL cells for up to 60 min, whereas refrigerated milk preserves viability for an additional 45 min [16] [17].

Saliva was found to be more effective than tap water [18], and the tooth can be easily carried by the patient keeping in the buccal vestibule. But the patient's saliva, although readily available at the site of trauma, contains bacteria and their by-products [16]. The osmolarity of saliva is 60-80 most/ltr much less than the normal range (230-400 mosm/ltr) required for cell growth [8] [19]. Furthermore, several studies have reported that the vitality of PDL cells can be sustained for 30 min when immersed in the patient's saliva, but it decreases remarkably after 60 min [11] [16].

Only 10% of the specialist's participants preferred saline as storage media. Saline has been shown to be a short-term storage media because of its physiologic osmolarity. It was found that the avulsed teeth that were soaked in saline solution for 30 minutes before replantation showed less root resorption than those stored dry for 15-40 minutes [8] [20].

There was a divergent opinion among the participants regarding the ideal time for replanting the tooth. According to Andreason, teeth that are replanted within 30 minutes have a better success rate than those that were extra oral for longer periods of time before replantation [13].

Most of the participants were aware that the tooth should hold the crown and wash with physiological solution, but the other chose to have 32% of general dentist select to hold by the crown and cleaned gently by running tap water to avoid damage to the PDL cells.

In conclusion, a statistically significant result was observed regarding the best storage medium, a critical time for avulsed tooth replantation and tooth management before replantation. Majority of the dental specialists responded correctly to most of the questions according to the IADT guidelines. As general dentists form a vital link with the patient, they need to be educated on emergency management of avulsed teeth and their dilemma about some aspects of this procedure can be solved by providing required awareness and knowledge.

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