



## **AWARENESS, ATTITUDE RESPONSE OF PARENTS TOWARD EMERGENCY MANAGEMENT OF AVULSED PERMANENT TOOTH OF THEIR CHILDREN IN EGYPT**

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### **ABSTRACT**

**Objective:** The purpose of this study is the evaluation of awareness level and attitude response for a sample representing Egyptian parents towards emergency management of permanent tooth avulsion for children via questionnaire methods.

**Materials and methods:** A 400 parents who had a children aged between 6 to 12 years attended at the Pediatric Dentistry clinic, Faculty of Dentistry, Modern Sciences and Arts University, Cairo, Egypt. The questionnaires were distributed among this sample to evaluate the knowledge level and attitude response among those parents toward emergency management of avulsed permanent tooth.

**Results:** The result in this study did reveal that 17.5% of the parents had previous information about the emergency management of the avulsed permanent tooth, and 42.8% believed in the possibility of replantation of the avulsed permanent tooth, 19.2% of them could replant the tooth by themselves. 38% of parents reported the necessity of immediate replantation, 37.4% did select a saline as suitable cleaning and 45% reported saline as the suitable transport media.

**Conclusion:** Egyptian parents do lack the most knowledge needed for proper management of avulsed permanent tooth, that is common in all levels regardless the difference in gender, education level and geographic background.

**Keywords:** traumatic injury, knowledge, tooth avulsion, lost tooth, emergency treatment.

### **INTRODUCTION**

Traumatic dental injuries are considered a serious public health challenges that have been neglected by majority of population as well as oral health professionals whom supposed to play the major role in its management <sup>(1)</sup>. Dental avulsion is defined as

complete displacement of the tooth outside of the socket; it may be with or without alveolar bone fracture <sup>(2)</sup>.

Dental avulsion commonly occurs in permanent dentition of children aged between 8 to 12 years as a result of fall and traffic accidents, contact sports

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or play, as loosely structured periodontal ligaments, short, incompletely developed root and low bone density lead to increased incidence of tooth avulsion in young age, while the highly susceptible tooth for avulsion is a maxillary central incisor due to its position in the dental arch followed by the lateral incisors and canines<sup>(3,4)</sup>. The occurrence of tooth avulsion ranges from 0.5 to 16% of all traumatic dental injuries of permanent dentation<sup>(5)</sup>.

Maintenance of permanent anterior teeth is not only essential for esthetics reasons but also for speech, mastication, arch discrepancy and psychological status of children<sup>(6,7)</sup>. Replacement of avulsed permanent tooth by using implant or bridge is not recommended in young age because of the possibility of interfering with the arch growth, which results in temporary replacement by removable partial denture in this sensitive period of child life. Moreover the replacement of permanent anterior teeth causes an economic burden on the family, so immediate replantation of avulsed permanent tooth is considered an ideal management which improving the image and self-esteem of the child<sup>(8,9)</sup>.

The most important factor affecting prognosis of replanted avulsed permanent tooth is minimizing the extra-alveolar duration of the tooth as it affects the viability of periodontal ligaments attached to the root; selection of suitable storage media during transportation of the avulsed tooth is important to prevent the dehydration of periodontal ligament<sup>(10)</sup>. Studies shown that the suitable storage media should have a proper osmolality and PH to maintain the vitality of periodontal ligaments, milk is considered an ideal storage media as it is reachable and fulfill these requirements<sup>(11)</sup>.

Since the majority of traumatic dental injuries occurs at home, the knowledge and the awareness

of the parents about the proper management of dental avulsion is essential for proper prognosis of the treatment. Several studies in different countries revealed that the knowledge of the population about the management of avulsed permanent tooth is very low<sup>(11,12,13,14)</sup>.

The aim of this study is the evaluation of awareness level and attitude response for a sample representing Egyptian parents towards emergency management of permanent tooth avulsion for children via questionnaire methods.

## MATERIALS AND METHODS

The present study was a questionnaire based on composed of 400 parents who had a children aged between 6 to 12 years admitted at Pediatric Dentistry clinic, Faculty of Dentistry, Modern Sciences and Arts University, Cairo, Egypt. The parents asked to participate in the study during the period of February to July 2018, following Declaration of Helsinki-Ethical Principles for Medical Research Involving Human Subject. The nature and the objective of the study were explained briefly to the parents. The questionnaires were distributed only to the parents who accepted to participate in this study.

The questionnaire was written in English then translated to simple Arabic language, modified from *Raphael and Gregory* questionnaire<sup>(15)</sup>. It composed of two parts, the first part was a demographic data (gender, educational level and geographical background) and the second part was contained of a 10 questions designed to measure the awareness and attitude of parents toward emergency management of avulsed permanent tooth, the questions were closed ended provided by the multiple answers, the parents were asked to mark the appropriate answer according to their knowledge, each answer list contained correct and

incorrect answers, any clarifications or comments regarding the questions were resolved by the author. Collection of the questionnaire were done immediately after the parents had completed it, and then followed by distribution of leaflets containing education of proper measures of management of avulsed permanent tooth to the participated parents.

**Statistical analysis**

Data were statistically described in terms of frequencies (number of cases) and percentages and compared using Chi-square (c<sup>2</sup>) test. Exact test was used instead when the expected frequency is less than 5. *p* values less than 0.05 was considered statistically significant. All statistical calculations were done using computer program IBM SPSS (Statistical Package for the Social Science; IBM Corp, Armonk, NY, USA) release 22 for Microsoft Windows.

**RESULTS**

A total 400 parent who had a children aged between 6 to 12 years attended at the Pediatric Dentistry clinic, Faculty of Dentistry, Modern Sciences and Arts University, Cairo, Egypt were included in this study. Demographic data of this study have been presented in (table 1).

The result of this study revealed that 17.5% of the parents had previous information about the emergency management of the avulsed permanent tooth, 43.5% gained the information from others and 30.4% from hospitals (table 2).

95.5% of parents reported the necessity of saving permanent tooth, and 42.8% believed in the possibility of replantation of the avulsed permanent tooth, 19.2% of them could replant the tooth by themselves (table 2).

The questions related to the replantation technique didn't answer by who didn't believe in possibility of replantation. 38% of parents reported the necessity of immediate replantation while 30.4% preferred to replant it after the bleeding has stopped and 19% will delayed the replantation for several days. 37.4% of parents were selected a saline as suitable cleaning media, 25% selected the brush and 16.4% selected the water. 45% of the parents have reported that the suitable transport media is the saline and the milk was reported by 17% (table 2).

76.3% of parents will seeking a dentist as a first place to contact followed by 22% will seeking the hospital. Among all parents 10.5% only had a previous experience with avulsed permanent tooth. (table 2)

There was no statistically significant difference between any of this demographic data except the educational level in relation to the possibility of replantation, as the illiterate parents have showed law awareness toward the avulsed tooth replantation (table 2, 3.4).

TABLE (1): Demographic data of the parents

Variable	n	%
<b>Gender:</b>		
- Males	110	27.5%
- Females	290	72.5%
<b>Educational levels:</b>		
- Illiterate	80	20.0%
- Elementary	71	17.8%
- Higher secondary school	141	35.3%
- University or higher	108	27.0%
<b>Geographical background:</b>		
- Urban	262	65.5%
- Rural	138	34.5%

TABLE (2): Response of parents of different gender toward emergency management of avulsed permanent tooth.

Question	Answers	Males		Females		Total	p value
		n	%	n	%	%	
Previous information	Yes	21	19.1%	49	16.9%	17.5%	0.606
	No	89	80.9%	241	83.1%	82.5%	
Source of information	Media	2	10.0%	6	12.2%	11.6%	0.009*
	Book	0	0.0%	3	6.1%	4.4%	
	Internet	6	30.0%	1	2.0%	10.1%	
	Health services	6	30.0%	15	30.6%	30.4%	
	Others	6	30.0%	24	49.0%	43.5%	
Necessity of saving of permanent tooth	Yes	105	95.5%	277	95.5%	95.5%	0.978
	No	5	4.5%	13	4.5%	4.5%	
Possibility of reimplantation	Yes	47	42.7%	124	42.8%	42.8%	0.995
	No	63	57.3%	166	57.2%	57.2%	
Self reimplantation	Yes	13	27.7%	20	16.0%	19.2%	0.084
	No	34	72.3%	105	84.0%	80.8%	
Ideal timing of reimplantation	Immediately	20	42.6%	45	36.3%	38%	0.183
	After bleeding stopped	14	29.8%	38	30.6%	30.4%	
	Within one hour	2	4.3%	6	4.8%	4.7%	
	At the same day	6	12.8%	6	4.8%	7%	
	After several days	5	10.6%	29	23.4%	19.9%	
Suitable cleaning media	Water	11	23.4%	17	13.7%	16.4%	0.480
	Saline	18	38.3%	46	37.1%	37.4%	
	Milk	2	4.3%	7	5.6%	5.3%	
	Disinfectant solution	4	8.5%	12	9.7%	9.4%	
	Nothing	3	6.4%	3	2.4%	3.5%	
	Brush	8	17.0%	35	28.2%	25.1%	
	Others	1	2.1%	4	3.2%	2.9%	
Suitable transport media	Water	5	10.6%	9	7.3%	8.2%	0.393
	Saline	18	38.3%	59	47.6%	45%	
	Milk	12	25.5%	17	13.7%	17%	
	Handkerchief	5	10.6%	15	12.1%	11.7%	
	Disinfectant solution	3	6.4%	16	12.9%	11.1%	
	Nothing	1	2.1%	4	3.2%	2.9%	
	Others	3	6.4%	4	3.2%	4.1%	
First medical service of contact	Dentist	86	78.2%	219	75.5%	76.3%	0.681
	Hospital	23	20.9%	65	22.4%	22%	
	General practitioner	1	0.9%	6	2.1%	1.7%	
Previous experience with avulsion injury	Yes	12	10.9%	30	10.3%	10.5%	0.869
	No	98	89.1%	260	89.7%	89.5%	

\*: Significant at  $P \leq 0.05$

TABLE (3): Response of parents of different educational level toward emergency management of avulsed permanent tooth.

Question	Answers	Illiterate		Preliminary		Higher secondary school		University or higher		p value
		n	%	n	%	n	%	n	%	
Previous information	Yes	10	12.5%	9	12.7%	25	17.7%	26	24.1%	0.123
	No	70	87.5%	62	87.3%	116	82.3%	82	75.9%	
Source of information	Media	2	20.0%	2	22.2%	2	8.0%	2	8.0%	0.303
	Book	0	0.0%	0	0.0%	1	4.0%	2	8.0%	
	Internet	0	0.0%	0	0.0%	2	8.0%	5	20.0%	
	Health services	1	10.0%	4	44.4%	7	28.0%	9	36.0%	
	Others	7	70.0%	3	33.3%	13	52.0%	7	28.0%	
Necessity of saving of permanent tooth	Yes	74	92.5%	71	100.0%	133	94.3%	104	96.3%	0.131
	No	6	7.5%	0	0.0%	8	5.7%	4	3.7%	
Possibility of reimplantation	Yes	22	27.5%	31	43.7%	65	46.1%	53	49.1%	0.018*
	No	58	72.5%	40	56.3%	76	53.9%	55	50.9%	
Self reimplantation	Yes	8	36.4%	7	22.6%	9	13.6%	9	17.0%	0.117
	No	14	63.6%	24	77.4%	57	86.4%	44	83.0%	
Ideal timing of reimplantation	Immediately	11	50.0%	9	29.0%	25	38.5%	20	37.7%	0.796
	After bleeding stopped	7	31.8%	9	29.0%	17	26.2%	19	35.8%	
	Within one hour	0	0.0%	1	3.2%	4	6.2%	3	5.7%	
	At the same day	1	4.5%	4	12.9%	4	6.2%	3	5.7%	
	After several days	3	13.6%	8	25.8%	15	23.1%	8	15.1%	
Suitable cleaning media	Water	5	22.7%	0	0.0%	11	16.9%	12	22.6%	0.147
	Saline	7	31.8%	15	48.4%	21	32.3%	21	39.6%	
	Milk	1	4.5%	0	0.0%	6	9.2%	2	3.8%	
	Disinfectant solution	1	4.5%	4	12.9%	7	10.8%	4	7.5%	
	Nothing	2	9.1%	1	3.2%	1	1.5%	2	3.8%	
	Brush	4	18.2%	11	35.5%	16	24.6%	12	22.6%	
	Others	2	9.1%	0	0.0%	3	4.6%	0	0.0%	
Suitable transport media	Water	1	4.5%	2	6.5%	5	7.7%	6	11.3%	0.227
	Saline	5	22.7%	16	51.6%	31	47.7%	25	47.2%	
	Milk	4	18.2%	4	12.9%	12	18.5%	9	17.0%	
	Handkerchief	7	31.8%	2	6.5%	6	9.2%	5	9.4%	
	Disinfectant solution	2	9.1%	5	16.1%	9	13.8%	3	5.7%	
	Nothing	2	9.1%	1	3.2%	1	1.5%	1	1.9%	
	Others	1	4.5%	1	3.2%	1	1.5%	4	7.5%	
First medical service of contact	Dentist	62	77.5%	52	73.2%	107	75.9%	84	77.8%	0.574
	Hospital	15	18.8%	18	25.4%	31	22.0%	24	22.2%	
	General practitioner	3	3.8%	1	1.4%	3	2.1%	0	0.0%	
Previous experience with avulsion injury	Yes	10	12.5%	7	9.9%	11	7.8%	14	13.0%	0.540
	No	70	87.5%	64	90.1%	130	92.2%	94	87.0%	

\*: Significant at  $P \leq 0.05$

TABLE (4): Response of parents of different geographic background toward emergency management of avulsed permanent tooth.

Question	Answers	Urban		Rural		p value
		n	%	n	%	
Previous information	Yes	43	16.4%	27	19.6%	0.430
	No	219	83.6%	111	80.4%	
Source of information	Media	4	9.5%	4	14.8%	0.705
	Book	2	4.8%	1	3.7%	
	Internet	4	9.5%	3	11.1%	
	Health services	11	26.2%	10	37.0%	
	Others	21	50.0%	9	33.3%	
Necessity of saving of permanent tooth	Yes	250	95.4%	132	95.7%	0.915
	No	12	4.6%	6	4.3%	
possibility of reimplantation	Yes	116	44.3%	55	39.9%	0.396
	No	146	55.7%	83	60.1%	
Self reimplantation	Yes	24	20.5%	9	16.4%	0.519
	No	93	79.5%	46	83.6%	
Ideal timing of reimplantation	Immediately	44	37.9%	21	38.2%	0.727
	After bleeding stopped	36	31.0%	16	29.1%	
	Within one hour	7	6.0%	1	1.8%	
	At the same day	8	6.9%	4	7.3%	
	After several days	21	18.1%	13	23.6%	
Suitable cleaning media	Water	19	16.4%	9	16.4%	0.949
	Saline	46	39.7%	18	32.7%	
	Milk	6	5.2%	3	5.5%	
	Disinfectant solution	11	9.5%	5	9.1%	
	Nothing	3	2.6%	3	5.5%	
	Brush	28	24.1%	15	27.3%	
	Others	3	2.6%	2	3.6%	
Suitable transport media	Water	11	9.5%	3	5.5%	0.150
	Saline	52	44.8%	25	45.5%	
	Milk	19	16.4%	10	18.2%	
	Handkerchief	13	11.2%	7	12.7%	
	Disinfectant solution	13	11.2%	6	10.9%	
	Nothing	1	0.9%	4	7.3%	
	Others	7	6.0%	0	0.0%	
First medical service of contact	Dentist	198	75.6%	107	77.5%	0.763
	Hospital	60	22.9%	28	20.3%	
	General practitioner	4	1.5%	3	2.2%	
Previous experience with avulsion injury	Yes	26	9.9%	16	11.6%	0.604
	No	236	90.1%	122	88.4%	

\*: Significant at  $P \leq 0.05$

## DISCUSSION

The importance of permanent teeth makes the proper knowledge and awareness of the parents toward management of avulsed permanent tooth is essential for saving it <sup>(11)</sup>.

The present study included 400 parents who had a children aged between 6 to 12 years attended at the Pediatric Dentistry clinic, Faculty of Dentistry, Modern Sciences and Arts University, Cairo, Egypt. A simple questionnaire was used as a good method for screening the level of parent knowledge and attitude in this study, the questions were covering all point needs to be evaluated. Section I included gender, educational level and geographic background, to study the effect of this demographic data on the parent's knowledge about management of avulsed permanent tooth in section II. The result in this study revealed that only 17.5% of the parents had a previous information about the emergency management of avulsed permanent tooth, this result was agreed with *Abdellatif and Hegazy, Gurunathan et al, and Jain et al* <sup>(11, 16, 17)</sup>. The main sources of this information were the other people, as family, relatives or friends and from the hospital. That's mean that it is very important to spread the awareness about the emergency managements of avulsed permanent tooth by mounting a posters and leaflet, organizing an educational programs especially in hospitals and health service places and in addition to media campaigns.

42.8% of the parents in this study believe in the possibility of replantation of permanent tooth after its avulsion, in spite of 95.5% of the parent believe in the necessity of saving permanent tooth which indicate that the parents having a positive attitude toward preservation of permanent tooth in spite of low knowledge about the method of saving it, this results were agreed with *Jindal et al and Gurunathan et al* <sup>(13, 16)</sup>. In relation to the possibility of replantation of avulsed permanent tooth there was a significant relation between the education

and this result as the illiterate shown low awareness about the possibility replantation of the avulsed permanent tooth and this was agreed by *Jain et al* <sup>(17)</sup>.

Among the parents who were believed in replantation of avulsed permanent tooth there were only 19.2% of them had an interest in replantation of the tooth by themselves this results agreed with *Al-Jame et al, Santos et al and Mohamed et al* <sup>(18, 19, 20)</sup>, the reason for this result could be due to lack of knowledge, excessive bleeding, hurting the child or they may didn't know how to replant it.

Most of parents have believed in the necessity of immediate replantation of the avulsed permanent tooth or after the bleeding has stopped this results agreed with *Jain et al* <sup>(17)</sup>. *Andreassen and Hjorting-Hansen* in their study concluded that the prognosis of replanted permanent tooth will be good if the tooth has been replanted before 20 minute, *Lin et al* in their study found that the appropriate time of reimplantation of an avulsed permanent tooth is within 30 minutes which shown 90% success <sup>(21, 22)</sup>.

In this study 37.4% of parents were selected saline as suitable cleaning media followed by 25% preferred scrubbing the tooth with brush while only 16% preferred water as a cleaning media this results were agreed with *Abdellatif and Hegazy and Mohamed et al* <sup>(11, 20)</sup> and didn't match the guidelines of the American academy of pediatric dentistry for the management of avulsed tooth as it is recommend the running water as preferable cleaning method <sup>(23)</sup>.

Selection of proper transport media for storage the avulsed permanent tooth is very important to keep the viability of the periodontal ligament until the time of replantation, the ideal storage median should preserve the cells of periodontal ligament and accessible in the place of trauma, in this study a 45% of the parents were select a saline as suitable transport media and only 17% selected milk, several studies have demonstrated a poor knowledge about transport media <sup>(11, 19, 24)</sup>. Milk is the most suitable

and reachable storage media, and the viability of periodontal ligament cells in milk was inferior to Hank's Balanced Salt Solution (HBSS) <sup>(23,25)</sup>.

76.3% of the parents have preferred to seek dentist for consultation instead of hospitals or general practitioners, even in rural area, this result was agreed with *Kaul et al and Gurunathan et al* <sup>(5, 16)</sup> and disagreed with *Qazi and Nasir and Shashikiran et al* <sup>(9, 24)</sup> who were found that rural areas seeking hospitals or general practitioners rather than dentist. 10.5% of the parents had experienced a previous traumatic dental injury causing avulsion of permanent tooth.

The results in this study showed low level of knowledge regarding the emergency management of avulsed permanent tooth, this results in accordance with other studies conducted in Egypt and different countries <sup>(11, 12, 17, 18)</sup>. Gender, educational level and geographic background didn't show significant difference in the majority of the answers; moreover, well-educated parents have little information about the management of avulsed permanent tooth.

In spite of there were two studies have been made previously in Egypt <sup>(11,20)</sup> and they concluded a lack of knowledge toward the emergency management of avulsed permanent tooth no attempt has been made by the dental organizations and the government in Egypt to educate the population about this serious emergency situation.

## CONCLUSION

Egyptian parents do lack the most knowledge needed for proper management of avulsed permanent tooth, that is common in all levels regardless the difference in gender, education level and geographic background.

Therefore, it is a must to establish an educational programs for parents, teachers, nurses, coaches and even physicians, mounting posters and leaflets in health services and public places in addition to

media campaigns to spread the awareness about emergency managements of avulsed permanent tooth, followed by several studies in different regions in Egypt to assess the awareness and the attitude of parents toward emergency management of avulsed permanent tooth, also several studies needed to assess the awareness and attitude of the teachers, coaches and general practitioner.

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