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**General Dentists' Knowledge of the Avulsion and Tooth Root  
Fracture Management in Ahvaz City**

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**Abstract**

This study aimed to evaluate the amount of general dentists' knowledge of the avulsion and the tooth root fractures in Ahvaz City. In this descriptive study, a questionnaire of 10 questions was used. The reference for the questions was two books: Principles of Endodontics, and Pathways of the pulp by Torabinejad. After determining the sample size and the preparation of the questionnaire to the desired number, by visiting to the general dentists' (n = 80) private office the questionnaire was given them. All the questionnaires were anonymous, and were answered with the dentists' consent. Questionnaires were delivered in the beginning of the shift and at the end of the shift and simultaneous with collecting the questionnaires the dentists received the correct answers for the questions. Questions were analyzed by single- question method and using the statistical test of t-test. The findings from this study suggest that the amount of knowledge about the avulsion management among 32.8%, 33.4, and 33.8% of the dentists is high, medium and low, respectively. Also, the amount of knowledge of management of root fracture is high(5%), medium (10%) and low (85%). Due to the low information of the dentists, retraining classes of root fracture management and teethe are necessary.

**Keywords:** Avulsion; Root fracture

**Introduction**

A traumatic dental lesion causes damage to many of the dental and *periradicular*. So, Management of such traumatic lesions is multipurpose and knowledge of how to deal in this kind of waste and treat them as well as awareness of the patterns of restoration of these tissues is essential.

Because such incidents often occur at an early age of 5-7 years, mostly in the *maxillary and mandibular anterior*,

in some respects, the management of timely treatment of this waste is very important.

Until the age of 14 years old about 25% of the children have had experienced wastes that involved their permanent teeth. The involvement of such events at an early age is of a dual nature of good -bad. its good nature is because pulp of these children is at higher levels in terms of the ability to restore and rebuild the vessels, and its bad nature is because if the blood flow

to these teeth suffer permanent damage, their origins remain unshaped and weak (1). The loss of the life of pulp in a young's permanent tooth creates problems; since the pulp is necessary for the formation of dentin if the pulp is lost prior to the completion of the root length, the ratio of the crown to the root increases. A failure to complete the deposition of dentin in the roots can create a fragile root that the usual methods of endodontics, also cannot be effective, optimally on this fragile root and a proper filling is not obtained due to a very open apex (2). If additional techniques like apexification or apical surgery are also done for these teeth, it would be a weaker prognosis than the complete roots (3 and 4). Therefore, if a young's permanent tooth that suffered a trauma, immediately undergo proper treatment and if the health plan is so that the process of revascularization can be created in them and maintain the life of the tooth, the tooth will have a better prognosis and more longevity for young patients. Since after the traumatic events, the public dentists are usually the first people whom are visited by their parents, and they must have a proper initial treatment to carry out, and then they refer the patients to an endodontists and since among the traumatic lesions, avulsions and the root fractures necessitate complicated treatments, we decided to evaluate the ability to treatment management and public awareness of these two traumatic lesions among dentists in Ahvaz.

## Materials and Methods

### *The study population, research design and sampling*

In this descriptive study, a questionnaire of 10 questions was used. The reference for the questions was two books: Principles of Endodontics, and Pathways of the pulp by Torabinejad. After determining the sample size and the preparation of the questionnaire to the desired number, by visiting to the general dentists' (n = 80) private office the questionnaire was given them. All the questionnaires were anonymous, and were answered with the dentists' consent. Questionnaires were delivered in the beginning of the shift and at the end of the shift and simultaneous with collecting the questionnaires the dentists received the correct answers for the questions. Questions were analyzed by single-question method and using the statistical test of t-test.

It is evident that along with the questionnaire provided to general dentists in Ahvaz and in collecting the questionnaire, we give them an educational handout containing the answers to questions raised in the questionnaire around the treatment of Avulsion and the root fractures.

### *Ethical considerations*

Because this was a field study and data collection was a questionnaire method, there was not a certain ethical consideration. The questionnaires were filled without name and address of dentists and with their satisfaction.

## Results

**Table 1.** The frequency of types of the dentists' responses to the questions

Number	Correct		False		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Type of response						
The first question	30	37.5 %	50	62.5 %	80	100 %
The second question	21	26.2%	59	73.8 %	80	100 %
The third question	21	26.2%	59	73.8 %	80	100 %
The fourth question	15	18.8%	65	81.2%	80	100 %
The fifth question	40	50 %	40	50 %	80	100 %
The sixth question	72	90 %	8	10 %	80	100 %
The seventh question	25	31.3 %	55	68.8 %	80	100 %
The eighth question	60	75 %	20	25 %	80	100 %
The ninth question	41	51.2 %	39	48.8 %	80	100 %
The tenth question	36	45 %	44	55 %	80	100 %

The above table indicates that 37.5% of the subjects answered the first question correctly, and 62.5% of the subjects answered the question incorrectly; 26.3% of the subjects answered the second question correctly, and 73.8% answered the question incorrectly; 26.3% of the subjects answered the third question correctly, and 73.8% answered the question incorrectly; 18.8 % of the subjects answered the fourth question correctly, and 81.2% answered the question incorrectly; 50% of the subjects answered the fifth question correctly, and 50% answered the question incorrectly; 90% of the

subjects answered the sixth question correctly, and 10% answered the question incorrectly; 31.3% of the subjects answered the seventh question correctly, and 68.8% answered the question incorrectly; 75% of the subjects answered the eighth question correctly, and 25% answered the question incorrectly; 51.3% of the subjects answered the ninth question correctly, and 48.8% answered the question incorrectly; 45% of subjects answered the tenth question correctly, and 55% answered the question incorrectly.

**Table 2.** The score of the dentists' responses to the questions related to root fracture (scores from 0 to100)

Score \ Number	Frequency	Percentage
0	11	13.7 %
20	27	33.8 %
40	30	37.5 %
60	8	10 %
80	4	5 %
Total	80	100 %

**Table 3.** The score of the dentists' responses to the questions related to the teethe (scores from 0 to100)

Score \ Number	Frequency	Percentage
0	1	1.2 %
20	8	10 %
40	18	22.5 %
60	26	32.5 %
80	23	28 %
100	4	5 %
Total	80	100 %

**Table 4.** The average score of the dentists' responses to the questions compared with the full score (scores from 0 to10)

Score Question	The mean of scores	The SD of scores	P-value
Root fracture	31.75	20.29	<0.001
Teethe	58.5	22.22	<0.001

**Table 5.** The amount of the dentists' knowledge of the management of root fractures and the teeth removed

The amount of knowledge of the question	High		Medium		Low		Total	
	number	percentage	number	percentage	number	percentage	number	percentage
Root fractures	4	5	8	10	68	85	80	100
The removed teeth	27	33.8	26	32.4	27	33.8	80	100

The above table shows that 85% of the dentists' knowledge of root fracture is low.

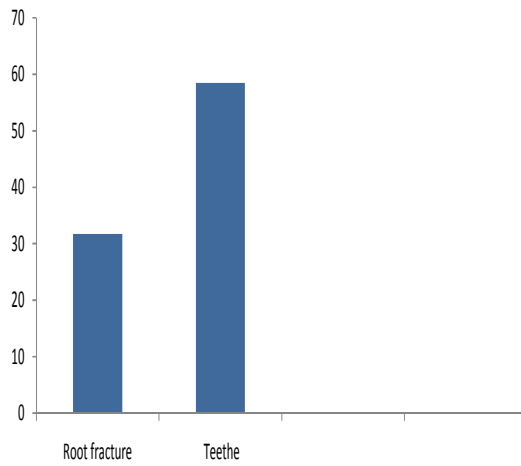


Figure 1. Average score of subjects

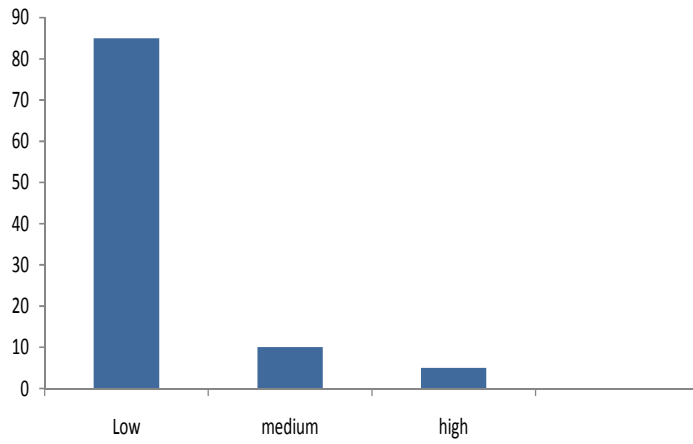


Figure 2. The amount of the dentists' knowledge of the removed teeth management

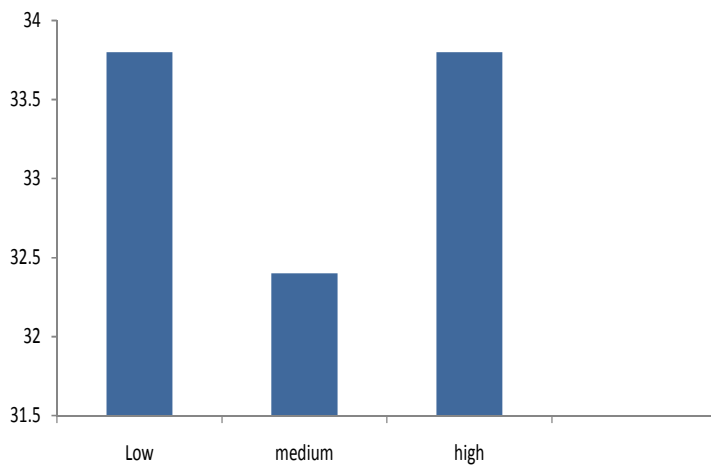


Figure 3. The amount of the dentists' knowledge of the management of root fractures

## Discussion

Tables 1 represents the frequency of the kind of answers to questions 1 to 10 and tables 2, and 3 represent a score of subjects in relation to the question relating to the tooth fracture and the eruption of the teeth. Table 3 also corresponds to the average score of subjects compared to with a perfect score (100). Table 4 shows the amount of dentists' knowledge about how to manage the root fractures and teeth removed with high, low, moderate scale. According to the obtained results (average score of the subjects was compared to a score of 100), scores of the dentists about questions of the root fracture, and the teethe were respectively 31.75 and 5.58, which with this score full score (high awareness) the difference is statistically significant (P 0.0001) the dentists' knowledge of the tooth root fracture and the tithe is not good. Table 14 also shows the knowledge of 50% of the dentists about root fractures is high and the knowledge of 33.8% of the dentists about teethe is high. Tables 2 and 3 also indicate that in questions related to the root fracture of the score of most subjects was 40% and in questions related to the teethe the score of subjects is 60% that show the dentists' knowledge about the questions relating to the teethe is higher than their knowledge about the root fracture.

The results of this research are consistent with the results of kostopoulou MN *et al.*'s study(2005) in the United Kingdom. They concluded that dentists' awareness of the treatments of dentoalveolar traumas in children is not enough.

The results of this research are inconsistent with the results of Abu Dawoud M *et al.*'s study in Kuwait (2007) in conjunction with that dentists' awareness of avulsion; They concluded that awareness level of 78.5% is high and 21.4% of them had the modest awareness, and low awareness level was not found among the dentists while in our study 33.8%, and 32.4% and 33.8% of the dentists' awareness level of avulsion was high, medium, and low, respectively.

The results from this research is not consistent with the results of de Franca RI *et al.*'s study (2004) in Brazil. They concluded that 36.6 of people asked questions about avulsion correctly, and 75.3 of people asked questions relevant to the crown fracture and 73.1% of people asked questions related to the events without dental damage correctly.

The results from this research is not consistent with the results of WestphalenVp *et al.*'s study (2007) in Brazil. They concluded that dentists' awareness of therapeutic measures of teeth avulsion in Curitiba in Brazil is appropriate and sufficient.

Due to the differences between this study and the previous studies, it is likely that dentists' year of graduation, their age, and different countries studied

are impressive in the amount of the knowledge difference.

## Conclusion

In relation to the amount of dentists' knowledge about the Avulsion management in Ahwaz city is in accordance with the current standards throughout the world, the results from this study show that awareness of 33.8%, 32.4%, and 33.8% of the general dentists is high, medium, and low, respectively.

In relation to the amount of dentists' knowledge about the management of root fractures in Ahvaz city is in accordance with the current standards throughout the world, the results from this study show that awareness of 5%, 10%, and 85% of the general dentists is high, medium, and low, respectively.

## Suggestions

- 1) To hold retraining classes concerning the root fracture management and the teethe;
- 2) a comparison between knowledge of the dentists with a high work experience and the young dentists about the tooth fracture management and the teethe; and
- 3) knowledge of school teachers of referring and actions before referring students in cases of fracture in the root and the teethe.

## Conflict of Interest

The authors declare there is no conflict of interest.

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## Appendices

### Questions related to a root fracture:

1- Do you take a dental radiography if a patient with the crown dislocation in the tooth number 1 refers you?  
Yes                      no

1.1. If the answer is Yes, which of the following options you choose?

(A) it is prepared in vertical angle perpendicular to the longitudinal axis of the teeth that normal and the video (B) you will lessen the vertical angle (C) you will increase the vertical angle too much (D) all options

2. In what condition the tooth will be splinted after you are sure that a tooth has a horizontal root fracture?

(A) If the fracture is in the 1.3 apical and *Tooth has a grade 2 mobility*. (B) in each case the teeth will be splinted. (C) in any case the tooth will not be splinted and patient will be just follow-up.

3. If when dealing with the fractured root, you have splinted tooth, how long you'll consider for splint?

(A) 7-10 days (B) 4-8 weeks (C) 2-4 weeks (D) 8-12-weeks

4. In a patient that has a root with a horizontal fracture, when you attempt to endodontic treatments for tooth?

(A) when, after three months, the vital pulp testing has shown negative response.

B-one week after splint (C) when the fractured root pieces have been apart and radiolucency in root fracture line is more (D) in any case you do not the endodontic treatments for tooth?  
and the patient will be the follow-up annually.

5. If you want do the endodontic treatment for a root that has a horizontal fracture in the middle and apical area of the root:

(A) two fractured pieces will be treated endodontically together and you will try to cross the fracture line with the file.

(B) a crownal piece will be removed and apical piece will be Force Eruption.

(C) you will do the endodontic treatment just for a crownal piece, and apical piece will be follow-up.

(D) you will do the endodontic treatment just for a crownal piece, and apical piece will be referred for an endodontist for an *apical* surgery.

### Questions related to Avulsion:

1. When a patient with an avulsed tooth refer to your office, which factors Will be considered for a treatment plan?

(A) the stage of evolution of the root (B) the period of time between the occurrence of the incident and the time of referring to the office (C) -a contribution of the patient (D) A&B

2. for keeping the removed tooth, which solution you will suggested until reaching a dentist?

(A) the patient's vestibule (B) water (C) normal saline (D) milk

3. When placement of the avulsed tooth with duration of stay dry under 60 minutes (1 hour), in which one of the following the repair process is more?

- (A) in any case the repair is done because at the golden time the tooth will be splinted.
- (B) If the tooth has the close apex, because its roots have less fracture its restoration process is more.
- (C) in each mode, it is not restored because the duration of 60 minutes is too long.
- (D) in the tooth has a more Open Apex because of additional potential of revascularization, the process of restoration is more.

4. the duration of the Avulsed splints for an avulsed tooth is:

- (A) 7-10 days (B) 1-3 weeks (C) 3-4 weeks (D) 2 months

5. In the first visit, which medicinal measures you will do for the patient with an avulsed tooth?

- (A) Administration of tetracycline and sedative for one week (B) Administration of *Chlorhexidine* mouth wash and sedative for one week
- (C) Administration of tetracycline (doxycycline) or penicillin V for patients who are sensitive to tetracycline and sedative for one week
- (D) Administration of tetracycline (doxycycline) or penicillin V for patients who are sensitive to tetracycline and *Chlorhexidine* mouth wash for one week

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