

# KNOWLEDGE, ATTITUDE AND PRACTICE IN EMERGENCY MANAGEMENT OF AVULSED TOOTH AMONG MEDICAL DOCTORS IN NOBEL MEDICAL COLLEGE, BIRATNAGAR, NEPAL : A CROSS SECTIONAL SURVEY

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## ABSTRACT:

**Aim:** The purpose of the survey is to assess the knowledge and attitude of medical doctors working in Nobel medical college, Biratnagar, towards emergency management of avulsed tooth.

**Materials and methods:** Study design – A cross sectional survey. 46 medical doctors were randomly included in the study and the participation was voluntary. Data regarding the emergency management of avulsed tooth was collected using a self administered questionnaire having questions which were close ended.

**Results:** 56.6% of the medical doctors knew the correct meaning of avulsed tooth. Only few 41.3% had prior knowledge about management of an avulsed tooth and remaining 58.6% were unaware of its management. Out of those, 78.9% acquired the information during their tenure of medical course and for remaining 5.2% the source of information being health talks on television or radio and CDE programmes. 58.6% choose saline as a best medium to preserve an avulsed tooth, 8.6% choose saliva, 4.3% milk. A very high number of medical professionals didn't know the ideal time for replantation of an avulsed tooth.

**Conclusion:** The knowledge of medical doctors about avulsion of tooth was fair. It is the responsibility of the dentists to make them aware of the importance of first aid for avulsed tooth with appropriate measures. Therefore, educational training programs should be developed and conducted to improve awareness regarding emergency management of an avulsed tooth.

**Key words:** Avulsed tooth, Attitude, Knowledge, Emergency management, Replantation.

## INTRODUCTION:

Tooth avulsion (exarticulation /total luxation) implies total displacement of an



intact tooth out of its socket. The frequency of tooth avulsions following traumatic injuries ranges from 0.5% to

16% in permanent dentition and from 7 to 13% in the primary dentition.<sup>[1-4]</sup>

The peak age for avulsion is between 7 to 9 years when permanent incisors are erupting and the teeth most commonly avulsed in both the primary and the permanent dentition are the maxillary central and lateral incisors.<sup>[5]</sup> Andreasen *et al.* suggest that the loosely structured periodontal ligament surrounding the erupting teeth and elasticity of alveolar bone favors complete avulsion

The permanent anterior teeth are not only important for aesthetics but are also essential for speech, mastication, health of the supporting tissues and psychological and mental health of children. Hence, immediate replantation of avulsed permanent tooth is generally accepted as the treatment of choice and contributes to an improved self-image and enhanced self-esteem in children.<sup>[6]</sup>

The success of tooth replantation is directly dependent on several factors, such as extra-alveolar period, storage of the tooth until replantation, type of retention employed, time of endodontic intervention, type of drug prescribed, oral hygiene status as well as general health. But among the entire most important factor that determines the prognosis of a replanted tooth is the viability of the periodontal ligament left on the root prior to replantation. To prevent dehydration of the root surface during transportation, the storage medium must be of correct osmolality and pH. Milk fulfils this requirement and is considered an excellent medium.<sup>[7,8]</sup>

Many patients in developing countries like Nepal visit medical doctors due to lack of awareness or unavailability of a dentist. Many avulsed teeth are lost only because of lack of knowledge about the

proper first aid procedures that need to be provided. Consequently, dental health education in this field can be very effective in reducing the negative consequences of such injuries. Parents and school teachers often have the first opportunity to attend to a child with a tooth avulsion injury, but the medical doctors are frequently the first to actually provide primary treatment. To ensure proper and appropriate management of the avulsed tooth, it is essential that medical professionals should have adequate knowledge and sufficient training in the basic principles of the emergency management of traumatic injuries.<sup>[9]</sup> Various surveys conducted on the medical professionals have showed lack of adequate knowledge.<sup>[9, 10, 11]</sup>

Few studies in literature assessed the knowledge of medical professionals regarding this situation<sup>[9, 11, 12]</sup> including one study from India<sup>[10]</sup> and none study done in Nepal. So the objective of our study is to assess the knowledge and attitude of medical professionals working in Nobel Medical College and Teaching Hospital, Biratnagar, towards emergency management of an avulsed tooth.

## **MATERIAL AND METHODS:**

The present study is a cross sectional survey conducted among medical doctors working in Nobel Medical College and Teaching Hospital, Biratnagar. Informed written consent was obtained prior to participation and strict confidentiality was assured to all the participants. Total of 46 doctors were interviewed by giving questionnaire proforma to know the knowledge and attitudes regarding emergency management of avulsed tooth. The

questionnaire was modified from questionnaires used in previous studies.<sup>[13]</sup> All questions in the questionnaire were close-ended and self administered.

The following fields of knowledge were assessed.

- Meaning of an avulsed tooth
- Immediate management of an avulsed tooth.
- Critical extra-alveolar time of the avulsed tooth.
- Optimal storage methods and media
- Proper cleaning technique of a grossly contaminated avulsed tooth before replantation.
- Proper handling of an avulsed tooth.

Results were analyzed, expressed and tabulated as a number and percentage of respondents for each question.

## RESULT:

All the medical doctors who were approached readily agreed to participate and returned the completed questionnaires on the same day.

When respondents were asked about the exact meaning of avulsion, 56.6% of doctors knew the exact meaning whereas 17.3% thought it as a partial dislodgement of an intact tooth, 15.2% felt it as dislodgement of fractured segment of intact tooth and 10.8% didn't know the exact meaning. Table 1

Question regarding the prior knowledge on the management of avulsed tooth, only few 41.3% had knowledge about it

and remaining 58.6% were unaware of the management of an avulsed tooth. Out of those who had knowledge on the management of avulsion, 78.9% acquired the information during their tenure of medical course and for remaining 5.2% the source of information being health talks on television or radio and CDE programs. Table 2

When participants were asked about the encounter of patient with an avulsed tooth, only 39.1% of the participants had come across with such patients and majority of them 94.4% had referred the patient to the dentist immediately whereas 5.5% had tried to replant it manually. Table 3

When enquired about the knowledge of transport medium for avulsed tooth, majority of the respondents 80.4% didn't know about it and only 19.5% knew it being dentist friend as a major source of information for 55.5% of participants. Table 4

More than half of the respondents 58.6% choose saline as a best medium to preserve an avulsed tooth, 8.6% choose saliva, 4.3% milk and water, and 19.5% didn't know the exact answer. Table 5

A very high number of medical professionals didn't know the ideal time for replantation of an avulsed tooth whereas 15.2% thought the ideal time is 1 hour and 6.5% answered it as 30 mins. Table 6

84.7% of the medical doctors would rinse the tooth with running tap water if the avulsed tooth was covered with dirt, 4.3% would wipe the tooth with tissue paper, 8.6% would do nothing. Table 7

50% prefer to hold the tooth by crown, 17.3% hold by root and 4.3% felt that an avulsed tooth can be hold from anywhere (crown or root) whereas 28.2% didn't know the exact answer. Table 8.

54.3% would not care if the avulsed tooth is deciduous whereas 45.6% would care even if it is a deciduous tooth. Table 9

## DISSCUSION:

The result of the study showed fair knowledge and attitude regarding tooth avulsion among medical professionals working in Nobel Medical College, Biratnagar. In the present study, more than half of the doctors didn't know what an avulsed tooth was. This is very surprising, since the medical doctors are frequently the first to contact in developing or underdeveloped areas that actually can provide primary treatment in absence of dentist.

58.6% of the participants had no prior knowledge regarding management of avulsed tooth and only 78.9% had received information during their tenure of medical course. A high level of awareness programs and training courses on the immediate management of tooth avulsion is obviously desirable among medical professionals which should emphasize the possible consequences following trauma so that they can at least provide the primary management at the earliest possible time before referring to the dentist. 94.4% of the participants preferred to refer the patient to the dentist. It was very encouraging that they felt the dentist can manage the situation better. However prognosis of an avulsed tooth is greatly enhanced by immediate

and appropriate measures taken preferably at the site of injury.

On review of literature, the appropriate storage media to permit periodontal and pulpal cells healing are milk, saline, water and saliva.<sup>[14]</sup> A great deal of confusion about ideal transport media was observed among respondents, 58.6% of them preferred normal saline as the best medium, 8.6% prefer saliva for storage and transportation with only 4.3% doctors identifying milk as well as water, the best media of transportation without prompting. In Singapore<sup>[15]</sup>, for instance, only 15% knew the ideal storage media and in China<sup>[16]</sup> only 9% choose milk as the best media for avulsion transport. If immediate replantation is not possible, avulsed teeth should be stored in a physiologic storage medium. Saliva should only be indicated when neither milk nor saline solution are available. Andreasen & Andreasen<sup>[17]</sup> clarified that when saliva is used as a storage medium, the extra-alveolar period must be limited to a maximum of 2 hr due to the slightly hypotonic nature of the medium and the fact that bacteria present in saliva may also have a harmful effect on later healing. Water is the least desirable storage medium because the hypotonic environment causes rapid cell lysis and increased inflammation on replantation.<sup>[18]</sup>

It is generally accepted that the ideal treatment for an avulsed tooth is immediate replantation. Time is one of the important factor for avulsed tooth to preserve their vitality after replantation. Few studies suggest that 20 to 30 mins is the maximum limit.<sup>[14]</sup> In our study, most participants were not aware of the desirability of replanting avulsed teeth 'immediately' or 'within half an hour.

15.2% thought the ideal time is 1 hour and 6.5% answered it as 30 mins. Hamintal et al study showed 10.7% of the respondent knew that an avulsed tooth can be replaced back into the socket but they feared being sued for replanting the tooth incorrectly. <sup>[19]</sup>

The knowledge to clean the avulsed tooth is very important as most of the avulsed tooth would fall on the ground and get dirty. Most of the participants i.e 50% were aware that the avulsed tooth should be held by crown and 84.7% prefer to clean avulsed tooth gently by running tap water to avoid damage to the PDL cells. 54.3% of the participants said that they would not care if the deciduous tooth is avulsed.

One study from Kuwait by Maha Abu Dawoud showed that 83.3% of the young physicians had no knowledge on the emergency management of an avulsed tooth. <sup>[20]</sup> Another study by A.Walker on medical doctors working in pediatric and accident & emergency department in St. James hospital USA showed that 67% of them had no knowledge regarding

emergency management of avulsed tooth. <sup>[21]</sup>

All this studies stressed the importance of educating the medical doctors regarding the emergency management of avulsed tooth.

## CONCLUSION:

It is concluded that, regardless of the level of education, the medical professionals of Nobel Medical College had fair knowledge and were lacking most of the knowledge required for emergency management of avulsed teeth and they preferred to refer the patient to the dentist. As medical doctors form a vital link between the patient and the dentist, we need to educate them on emergency management of an avulsed tooth. Therefore, educational training programs should be developed and conducted to improve awareness regarding emergency management of an avulsed tooth. These programs should also include teachers, nurses, coaches, and even receptionists.

## REFERENCES:

1. Gelbier S. Injured anterior teeth in children. A preliminary discussion. *Br Dent J* 1967;123:331-5.
2. Hedegard B, Stalhane I. A study of traumatized permanent teeth in children 7-15 years. *I. Sven Tandlak Tidskr* 1973;66:431-52.
3. Ravn JJ. Dental injuries in Copenhagen schoolchildren, school years 1967-1972. *Community Dent Oral Epidemiol* 1974;2:231-45.
4. Shashikiran ND, Reddy VVS, Nagaveni NB Knowledge and attitude of 2000 parents (Urban and rural-1000 each) with regard to avulsed permanent incisors and their emergency management and around Davanagere. *J Indian Soc Pedo Prev Dent* 2006;24:116-121.
5. Andreasen JO, Borum MK, Jacobsen HL, Andreasen FM. Replantation of 400 avulsed permanent incisors. 1. Diagnosis of healing complications. *Endod Dent Traumatol* 1995;11(2):51-8.

6. Andreasen JO, Andreasen FM, Andersson L. Textbook and colour atlas of traumatic injuries to the teeth. 4<sup>th</sup> ed. Copenhagen, Denmark: Munksgaard; 1994.
7. Andreasen JO, Borum MK, Jacobsen HL, Andreasen FM. Replantation of 400 avulsed permanent incisors. 4. Factors related to periodontal ligament healing. *Endod Dent Traumatol* 1995;11(2):76-89.
8. Marino TG, West LA, Liewehr FR, Mailhot JM, Buxton TB, Runner RR, et al. Determination of periodontal ligament cell viability in long shelf-life milk. *J Endod* 2000;26(12):699-702.
9. Abu Dawoud M, Al Enezi , Andersson L, Knowledge of emergency management of avulsed teeth among young physicians and dentist. *Dental Traumatology* 2007; 23: 348- 55.
10. Krishnaraj Subhashraj, Awareness of management of dental trauma among medical professionals in Pondicherry India. *Dental Traumatology* 2009; 25: 92-94.
11. A Walker, J Brenchley, It's a Knock out: Survey of the management of avulsed teeth. *Accident and Emergency nursing* 2000; 8: 66-70.
12. Alastair N Stokes, Heather K Anderson, Tony M Cowan, Lay. Professional Knowledge of method for Emergency management of avulsed teeth. *Dental Traumatology* 2008; 24: 325-9.
13. Jyothi KN, Venugopal P, Soumyaranjan Nanda, Mahaveer kumar Shah. Knowledge and attitude of medical doctors towards emergency Management of avulsed tooth- A cross sectional survey. *Journal of Dental Sciences & Research*, 2011; 2:1: 156-167.
14. Al-Jundi SH, Al- Waeili H, Khairalah K. Knowledge and attitude of Jordanian school health teachers with regards to emergency management of dental trauma. *Dent Traumatol* 2005: 183-87.
15. Sae-Lim V, Lim LP. Dental trauma management awareness of Singapore pre-school teachers. *Dent Traumatol* 2001;17:71-6.
16. Chan AW, Wong TK, Cheung GS. Lay knowledge of physical education teachers about the emergency management of dental trauma in Hong Kong. *Dent Traumatol* 2001;17:77-85.
17. Andreasen JO, Andreasen FM. Essentials of traumatic injuries to the teeth, 1st edn. Copenhagen: Musksgaard; 1994. 113-31 pp.
18. Blomlof L. Milk and saliva as possible storage media for traumatically exarticulated teeth prior to replantation. *Swed Dent J Suppl* 1981;8:1.
19. Blakytyn C et al. Avulsed tooth knowledge on school teacher. *Int* 2001: 327-32.
20. Abu Dawoud M, Al Enezi , Andersson L, Knowledge of emergency management of avulsed teeth among young physicians and dentist. *Dental Traumatology* 2007; 23: 348- 55.
21. A Walker, J Brenchley, It's a Knock out: Survey of the management of avulsed teeth. *Accident and Emergency nursing* 2000; 8: 66 – 70.

**TABLES:****Table 1**

What is avulsion of tooth?	Number of participants (46)	Percentage
a. Total dislodgement of intact tooth out of its socket	26	56.5%
b. Partial dislodgement of intact tooth out of its socket	8	17.3%
c. Dislodgement of fractured segment of the intact tooth	7	15.2%
d. Don't know	5	10.8%

**Table 2**

Any prior knowledge about management of avulsed tooth	Number of participants (46)	Percentage
a. yes	19	14.3%
b. no	27	58.6%
Source of information	Number of participants (19)	Percentage
a. CDE programme	1	5.2%
b. Health talks on TV, Radio	1	5.2%
c. Conference, convention	0	0%
d. During tenure of medical course	15	78.9%
e. Others	2	10.5%

**Table 3**

Have you ever come across a patient with avulsion?	Number of participants(46)	Percentage
a. Yes	18	39.1%
b. No	28	60.8%
If yes, what did you do?	Number of participants(18)	Percentage
a. Refer to dentist	17	94.4%
b. Try for replantation	1	5.5%
c. Instruct patient to preserve tooth in saline until appointment	0	0%
d. Discard the tooth	0	0%

**Table 4**

Do you ever heard about transport medium?	Number of participants (46)	Percentage
a. Yes	9	19.5%
b. No	37	80.4%
If yes, what was your source of information?	Number of participants(9)	percentage
a. CDE programe	0	0%
b. Health talks on TV or Radio	0	0%
c. Conference or convention	2	22.2%
d. Dentist friend	5	10.8%
e. others	2	4.3%

**Table 5**

Best medium to preserve the tooth	Number of participants (46)	Percentage
a. water	2	4.3%
b. saline	27	58.6%
c. saliva	4	8.6%
d. milk	2	4.3%
e. antiseptic	1	2.1%
f. paper	1	2.1%
g. don't know	9	19.5%

**Table 6**

Ideal time for replantation of the avulsed tooth	Number of participants (46)	Percentage
a. 15 mins	2	4.3%
b. 30 mins	3	6.5%
c. 45 mins	1	2.17%
d. 1 hr	7	15.2%
e. After few days	2	4.3%
f. Don't know	31	67.3%

**Table 7**

You encounter a patient with knocked-out tooth and it is dirty, will you	Number of participants (46)	Percentage
a. Wipe the tooth with a tissue paper	2	4.3%
b. Clean the tooth with a tooth brush	1	2.1%
c. Rinse the tooth gently under running tap water for a few seconds without scrubbing it.	39	84.7%
d. No need to clean the tooth because it is useless	4	8.6%

**Table 8**

How to hold an avulsed tooth?	Number of participants (46)	Percentage
a. From the crown	23	50%
b. From the root	8	17.3%
c. Anywhere (crown or root)	2	4.3%
d. Don't know	13	28.2%

**Table 9**

Would you care if avulsed tooth were primary tooth?	Number of participants (46)	Percentage
a. Yes	21	45.6%
b. No	25	54.3%