



RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE IN EMERGENCY MANAGEMENT OF AVULSED AND FRACTURED TOOTH IN KVG MEDICAL COLLEGE AMONG POST GRADUATE STUDENTS AND STAFF MEMBERS—A CROSS SECTIONAL STUDY

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ABSTRACT

Introduction:—Avulsion is the total dislodgement of an intact tooth from its socket. The principal challenge is to maintain the vitality of periodontal cells, as prognosis of a replanted tooth is directly proportional to the viable periodontal cells. Use of physiological storage media like milk, saliva or saline is critical to maintain the viability of periodontal cells until professional help is obtained. To ensure proper and appropriate management of the avulsed tooth, it is essential that medical professionals have sufficient knowledge on the emergency management.

Aim:—The objective of this study was to assess the knowledge and attitudes among KVG Medical College Doctors towards emergency management of Avulsed and fractured tooth.

Materials and Methods:—In this survey 55 medical college doctors were randomly included in the study with their voluntary participation. Data regarding the emergency management of avulsed and fractured tooth was collected using a questionnaire having questions which were close ended.

Results:—cross sectional study participant doctors out of 55 respondents 61.8% of the participants knew the correct meaning of avulsed tooth. 20% of the participants thought avulsion as the dislodgement of fractured segment of the tooth and 20% did not know the meaning. 41% of the participants did not have the prior knowledge about the management of an avulsed tooth. 90.9% of the participants would suggest the patient to consult the dentist in case they come across a patient with avulsed tooth. None of the participants preferred milk to preserve the tooth in case professional care is not possible immediately. 92.7% not aware about root fracture in apical, middle as well as cervical third and its consequences and management. Only 9.2% knows about tooth fracture traumatised with vertical fracture involving root.

Conclusion:—An education programme should be conducted to increase the knowledge and awareness of management of avulsed tooth and fractured tooth. From the survey conducted many of the participants showed a fair knowledge on the emergency management of an avulsed and fractured tooth and their dilemma pertaining to some aspects of this procedure can be solved by providing required awareness and knowledge.

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INTRODUCTION

Avulsion is the total dislodgement of an intact tooth from its socket. According to Andreasen dental traumatic injuries ranging from simple enamel chip to an extensive maxillofacial trauma are usually the result of sports activity, fights, road traffic accidents and other intentional assaults. These injuries occur more frequently among children than adults. One of the most common dental traumatic injuries is the total displacement of the tooth out of its socket or tooth avulsion. It

accounts for about 0.5–16% of dental trauma. As dental injuries are more prevalent in the age group of 7–12 years, knowledge regarding the management of dental injuries is vital to groups. The peak age for avulsion of permanent anterior tooth is between 7 and 9 years (Holan, 2003). Various studies show that the permanent tooth can survive longer if the first aid procedures and management is undertaken within the first 15 min of avulsion (Abu-Dawoud et al., 2007). An important factor, which determines the success of replanted permanent tooth, is the viability of the periodontal ligament on the root. The avulsed tooth has to be stored in different storage media to prevent dehydration (Shashikiran, 2006). Hence we designed a study to evaluate by means of a questionnaire, the knowledge

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and awareness of dental traumatic injuries among present and prospective post graduate student and staff members of a kvg medical college & hospital in sullia, DK karnataka.

Aim and objective: The aim of study is to assess the knowledge and awareness regarding the emergency management of dental traumatic injuries mainly avulsed and fracture tooth among the post graduate students and staff members in KVG Medical College & Hospital, Sullia.

MATERIALS AND METHODS

Source of the Data: Ethical concern obtained from ethical community of kvg medical college. Questionnaires answered by post graduate students and staff members in KVG Medical College & Hospital, Sullia. The present study will be a cross sectional questionnaire study conducted among post graduate students and staff members of a KVG Medical College, Sullia in Karnataka. The objective and procedure of study in advance will be explained to the subjects beforehand and volunteered participants were asked to assemble in a lecture hall on a predetermined date and time,

- Sufficient time were given to the students & staff for completing the forms. Later the forms were collected and the confidentiality maintained. All the post graduates and staffs members present on the day of the study were included in the study,
- The questionnaires collected from different published articles and the questions used in the study was condensed into 17 items covering the important aspects of study.
- Total of 55 questionnaires distributed among post graduate students and staff members. Confidentiality was assured to the participants.

Questionnaire

1. What is avulsion of tooth ?

- Total dislodgement of intact tooth out of its socket, due to any trauma
- Dislodgement of fractured segment of the tooth due to any trauma
- Don't know exactly the phenomenon how & why

2. Do you have any prior knowledge about the management of avulsed tooth?

- Yes
- No

3. Have you ever come across a patient with avulsion of tooth?

- Yes
- No

4. What will be your suggestion?

- Contact your dentist
- Wet the tooth
- Dry the tooth
- Discard the tooth saying it is of no use

5. In case if immediate professional care is not available and the tooth needs to be preserved, then what would be the best medium selected to preserve the tooth?

- Water
- Saline
- Patients saliva
- Milk

6. What will be the ideal time for re implanting the tooth?

- 15 mins
- 30 mins
- 45 mins
- 1 hrs

7. You found the knocked-out tooth and it is dirty, will you?

- Wipe & clean the tooth with a tissue paper
- Clean the tooth with a tooth brush
- Rinse the tooth gently under running tap water for a few seconds without scrubbing it.
- No need to clean the tooth because it is useless

8. If you were at a site where someone knocked-out a tooth, you would

- Not take any action
- Not take action because of the medico-legal consequences
- Be confident and replant the tooth

9. If a tooth is partially avulsed/subluxated with injury to tooth supporting structures, what would you do?

- Wait and watch
- slight adjustment of opposing tooth to relieve occlusion.
- Splinting for 1 week to 10 days with soft diet advised for 10 to 14 days and follow up of tooth clinically and radiographically.

10. Do you know about management of avulsed tooth with open apex?

- yes
- no

11. Do you have attended any educational program on traumatic management of avulsed tooth and regarding splinting ?

- yes
- no

12. Do you able to differentiated between primary and permanent teeth?

- yes
- no

13. Do you know about Management of primary avulsed teeth differ from permanent avulsed teeth?

- yes
- no

Fractured tooth

14. Do you know about if a tooth fracture in coronal part ?, you would

- Do not take any action
- Refer to dentist and required for aesthetic concern

15. Are you aware about consequences and management of root fracture in apical, middle, as well as cervical third?

- yes
- no

16. If a tooth traumatised with vertical fracture involving root, what would you do.?

- do not take any action
- wait for few days
- evaluated radiographically & refer to near dentist

17. If a tooth is slight displaced axially into alveolar bone (intrusive –luxation). what would you do?

- a) wait and watch for few days
- b) evaluated radiographically and refer to near dentist as soon as possible.

RESULTS

Some important observations are presented with the help of bar graphs. 61.8% of the participants knew about the correct meaning of avulsed tooth, 20% of the participants thought avulsion as the dislodgement of fractured segment of the tooth and 20% participant did not know the meaning of avulsed tooth. And 41% of the participants did not have the prior knowledge about the management of an avulsed tooth. While 17.4% had received information during the medical course. 23.6 % of the participants had come across patients with avulsed tooth. 90.9% of the participants would suggest the patient to consult the dentist in case they come across a patient with avulsed and fractured tooth.

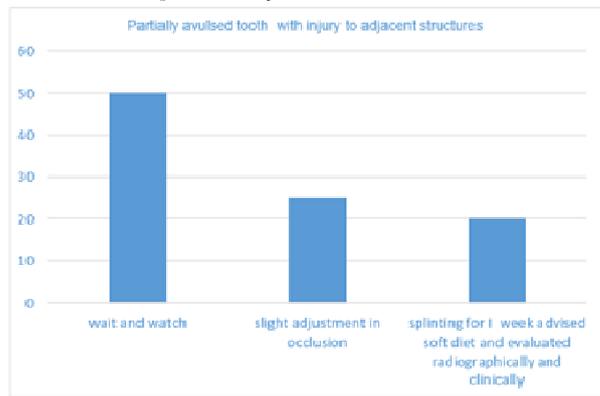


Figure 4. Partially avulsed tooth

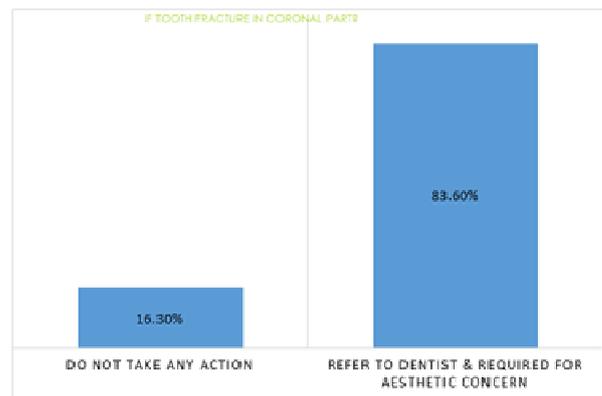


Figure 5. Awareness regarding fractured tooth

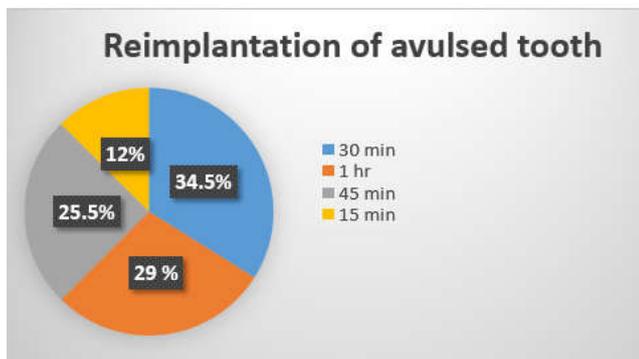


Figure 1. Reimplantion of avulsed tooth

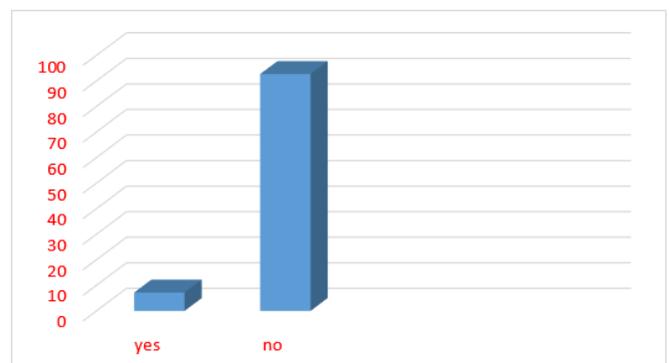


Figure 6. Aware about consequences and management of root fracture in apical, middle cervical third tooth

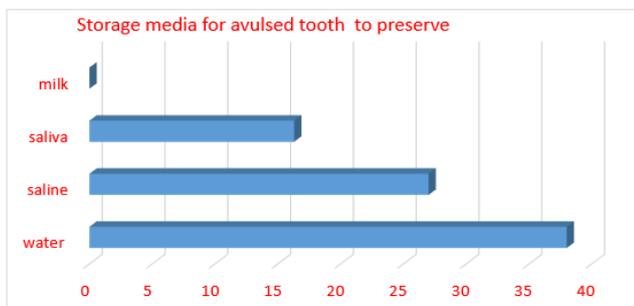


Figure 2. Storage media for avulsed tooth

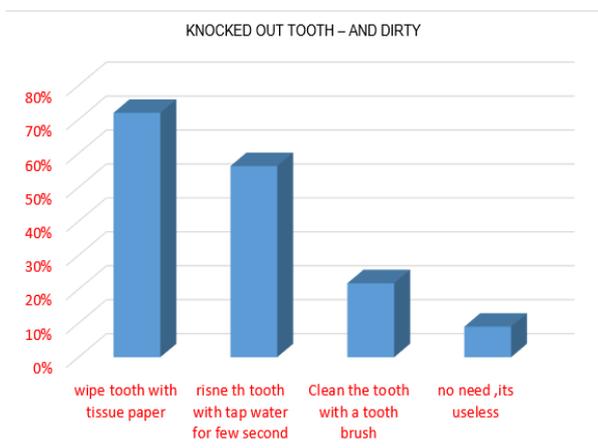


Figure 3. Knoced out tooth

None of the participants preferred milk to preserve the tooth in case professional care is not possible immediately, where as 38.1% preferred water, 27% preferred saline and 16% preferred patient’s saliva. 29% of the participants felt the tooth should be replanted with in half an hour, 25.5% felt replantation possible with in 45 min, 12.7% thought replantation possible with in 15 min, where as 30% did not answer. 34.5% felt the ideal time for replantation of avulsed tooth is 30 min, while If a tooth knocked- out and dirty 56.3% suggests rinse tooth gently under running tap water for a few seconds without scrubbing it. 21.8% suggests clean with tooth brush. 7.2% wipe with tissue paper. While 9% suggests no need to clean because its useless. Whenits related to whether they have attended any educational program on management of traumatic avulsed tooth with splinting 83% did not attend educational programme. only 16.5 % attended educational programme. In terms of cde/audiovisual. 21.8% of the participants prefer to refer the patients to the dentist even if they are present at the site of

injury. Only 29% replant the tooth confidently. While 49.8% do not take any action because of medicolegal consequences. 82.5 % were not aware of about management of a avulsed teeth with open apex. Only 17% aware about.

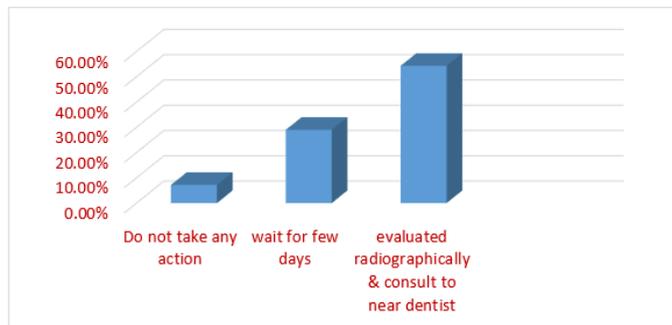


Figure 7. Tooth traumatised with vertical fracture involving root

For a fractured tooth coronally 83.5% refer to dentist for aesthetic concern when its needful. While 12% do not take any action. 92.7% not aware off about root fracture in apical, middle as well as cervical third and its consequences and management. Only 9.2% knows about. Tooth fracture traumatised with vertical fracture involving root. 54.2% refers to dentist, evaluated radiographically. 29% suggests wait for few days. while 7.2% suggests do not take any action. 60% suggests refer to dentist when tooth displaced axially into alveolar bone –intrusive luxation. 40 % wait and watch for few days.

DISCUSSION

Dental first aid is simple and inexpensive and can dramatically improve future dental outcomes. Dental traumatic injuries may present as an isolated injury or as multiple extended injuries. In either case, medical professionals in their emergency department often treat them. In study 38.1 % participant Water suggested water because of it's hypotonicity will adversely affect the vitality of the periodontal ligament cells leading to rapid cell lysis (Trope, 1992). Andreason favours milk as a storage medium as it maintains vitality of periodontal ligament cells upto 3 hours. Cvec *et al* 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 (Blomlof, 1981), and the tooth can be easily carried by the patient keeping in the buccal vestibule. But saliva has a potential for bacterial contamination. The osmolarity of saliva is 60 – 80 m osm/ltr much less than the normal range (230 – 400 mosm/ltr) required for cell growth. The osmolarity of milk is 232 mosm/l (Toby Thomas *et al.*, 2008). Gamsen *et al.* has shown that milk is able to maintain the osmotic pressure of periodontal ligament cells, but does not have the ability to reconstitute cell metabolites and restore viability (Shkenazi *et al.*, 1999).

There was divergent opinion among the participants regarding the ideal time for replanting the tooth. According to Andreason and Hjorting, 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 (Andreason, 1966). Treatment of avulsed teeth is divided in 2 main stages: 1. emergency treatment that should be provided as soon as possible; and 2. definitive treatment based on a clinical and radiographic follow-up examination. The American

Association of Endodontics (AAE) published therapeutic protocols (Treatment of the avulsed permanent tooth, 1995). To standardize the concept and treatment of dental trauma cases. The recommendations emphasized the importance of minimizing damage to the root cementum and periodontal tissues to prevent infection of the root canal. During the last years, the International Association of Dental Trauma (IADT) published new recommendations that established new concepts and suggestions especially for avulsed teeth that were kept outside of the mouth in nonbiological conditions for more than 60 minutes (Flores, 2001). The new therapeutic protocol emphasizes preconditioning the root as a prior stage to the replantation of the tooth.

Treatment of teeth that have completed root development is different from that involving an immature root. It is very important to take into consideration how long and under which conditions the tooth was kept out of the mouth, Avulsed teeth should be replanted in the socket as soon as possible. The long-term success depends mainly on the extraoral period, Treatment of the root surface 1. Eliminate the necrotic tissue from the root surface. The procedure can be performed mechanically (curettage), (Ram, 2004), or chemically using EDTA 24%, citric acid, or sodium hypochlorite (Selvig, 1992; Yang, 1989) 2. Hold the tooth by the crown and irrigate the root surface with sterile saline. 3. Soak the tooth in a sodium fluoride 2.4% 5.5 pH solution for 20 minutes (Shulman, 1973) or, if available, fill the socket with Emdogain (Flores, 2001). In recent years, several treatment modalities were proposed to delay or prevent the associated root resorption and, thus, increase the long-term success rate of avulsed teeth (Ram, 2004). The International Association of Dental Traumatology (IADT) guideline for management of avulsed mature permanent teeth replanted after 60 minutes in dry extraoral conditions endorses the use of Emdogain prior to replantation. Hence Hand outs containing simple guide lines for the emergency management of avulsed tooth were prepared as per the recommendations by International Academy of Dental Traumatology (Flores *et al.*, 2007), and distributed to all the medical doctors. It has been recommended that the presence of individuals trained in dental first aid would be an effective way of reducing both the incidence and effects of dental trauma in emergencies should be aware of their important roles in cases of traumatic dental injuries, particularly those involving avulsed Permanent teeth and fractured tooth, in order to minimize later complications. The most important factor in treatment of some dental injuries is time. The longer the time lapse between tooth avulsion and re-implantation, the greater the risk of replacement resorption and inflammatory root resorption.

Conclusion

An education programme should be conducted to increase the knowledge and awareness of management of avulsed & fractured tooth. From the survey conducted many of the participants showed a fair knowledge on the emergency management of an avulsed & fractured tooth and their dilemma pertaining to some aspects of this procedure can be solved by providing required awareness and knowledge. As medical Doctors form a vital link between the patient and the dentist they need to be educated on emergency management of avulsed and fractured tooth. In the same situation dentist can make them aware about certain consequences & treatment modalities required for avulsed and fractured tooth.

REFERENCES

- Abu-Dawoud, M, Al-Enezi, B. and Andersson, L. 2007. Knowledge of emergency management of avulsed teeth among young physicians and dentists. *Dent Traumatol.*, 12(3) 112-120
- Andreason, J.O., Hiorting Hansen, E. 1966. Replantation of teeth :I, Radiographic and clinical study of 110 human teeth replanted after accidental loss. *Acts OdontolScand.*, 24:263-86.
- Blomlof, L., Otteskog, P., Hammarstorm, L. 1981. Effect of storage in media with different ion strengths and osmolalities on human periodontal ligament cells. *Scand J Dent Res.*, 89:180-7
- Flores, M.T., Andreason, J.O., Bakland, L.K., et al. 2001. Guidelines for the evaluation and management of traumatic dental injuries. *Dent Traumatol.*, 17:193-198.
- Flores, M.T., Andreason, L., Andreason, J.O., Bakland, L.K., Maimgren, B., Barnett, F. et al. 2007. Guidelines for management of traumatic dental injuries II. *Avulsion of permanent teeth.* *Dent Traumatol.*, 23:130-6
- Holan, G., Shmueli, Y. 2003. Knowledge of physicians in hospital emergency rooms in Israel on their role in cases of avulsion of permanent incisors. *Int J Paediatr Dent.*, 13(1):13-9.
- Hugar, S.M., Suganya, M., Kiran, K., Vikneshan, M., More, V.P. 2013. Knowledge and awareness of dental trauma among Indian nurses. *IntEmergNurs.*, 21(4):252-6.
- Knowledge and Attitude of Medical Doctors Towards Emergency Management of Avulsed Tooth- A cross sectional survey. *Journal of Dental Sciences and Research*, 2011; 2(1):156-167
- Ram, 2004. Cohenca Treatment for avulsed permanent teeth Pediatric Dentistry – 26:3.
- Selvig, K.A., Bjorvatn, K., Bogle, G.C., Wikesjo, U.M.E. 1992. Effect of stannous fluoride and tetracycline on periodontal repair after delayed tooth replantation in dogs. *Scand J Dent Res.*, 100:200-203
- Shashikiran, N.D., Reddy, V.V., Nagaveni, N.B. 2006. Knowledge and attitude of 2,000 parents (urban and rural - 1,000 each) with regard to avulsed permanent incisors and their emergency management, in and around Davangere. *J Indian Soc Pedod Prev Dent.*, 24(3):116-21.
- Shkenazi, M., Saranath, H., Keila, S. 1999. In vitro viability, mitogenicity and clonogenic capability of periodontal ligament cells after storage in six different media. *Endod Dent Traumatol.*, 15:14956.
- Shulman, L.B., Gedalia, I., Feingold, R.M. 1972. Fluoride concentration in root surfaces and alveolar bone of fluoride immersed monkey incisors three weeks after replantation. *J Dent Res.* 52:1314-1316.
- Toby Thomas, VelayuthamGopikrishna, Deivanayagam K and aswamy. 2008. Comparative evaluation of maintenance of cell viability of an experimental transport media “coconut water” with Hank’s balanced salt solution and milk, for transportation of an avulsed tooth: An in vitro cell culture study. *J Conserv Den.*, 11:22-29.
- Treatment of the avulsed permanent tooth: Recommended guidelines of the American Association of Endodontists. AAE publication; 1995
- Trope, M. and Friedman, S. 1992. Periodontal healing of replanted dog teeth stored in Viaspan, milk and Hank’s balanced salt solution. *Endod Dent Traumatol.*, 8:1838.
- Yang, Z.P., Chan, C.C., Yang, S.F., Lee, G., Yang, S.F. 1989. The interrelationship between the root surface and alveolar bone of replanted avulsed tooth after etching. *Zhonghua Yi XueZaZhi (Taipei)*. 1989; 44:298-303
- Zhao, Y., Gong, Y. 2010. Knowledge of emergency management of avulsed teeth: a survey of dentists in Beijing, China. *Dent Traumatol.* 26(3):281-4.
