

The Status of Knowledge Related to the Emergency Management of Avulsed Tooth amongst the Medical Practitioners of Nagpur, Central India

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ABSTRACT

Introduction: Tooth avulsion is a frequently reported traumatic injury amongst young children and whenever it occurs, the parents or teachers of those children often seek the help of Medical Practitioners to provide the first line of treatment. Therefore, the general physician's knowledge regarding the same is an important issue to be taken into consideration.

Aim: To assess the knowledge, attitude and practice of general medical practitioners of Nagpur city of Central India regarding emergency management of avulsed tooth and highlight the importance of avulsed tooth education in schools and medical colleges in order to increase the knowledge of the same among teachers, parents and general physicians.

Materials and Methods: A cross-sectional survey was carried out amongst 1045 medical doctors after a comprehensive search made in Google database using the keywords "Medical", "doctors" "Nagpur". Data regarding the emergency management of avulsed tooth was collected using a self administered close ended questionnaire.

Results: A total of 1045 medical practitioners (718 males, 327 females) voluntarily participated in this survey. It was observed that 56.8% of the medical practitioners had no prior knowledge of management of an avulsed tooth. A 81.6% of practitioners were unaware of transport medium for an avulsed tooth whereas, more than half practitioners (64.7%) were naive about an ideal time for replantation of an avulsed tooth. A little more than one third of the practitioners (26.5%) were unacquainted about the method of holding an avulsed tooth.

Conclusion: Regardless of the level of education, the general medical practitioners of Nagpur lack most of the knowledge required for the emergency management of an avulsed teeth. Keeping the in mind the present scenario, it was recommended that education regarding avulsed tooth should be incorporated in school and medical curriculum to increase awareness among parents, teachers and medical practitioners. Also, it is the responsibility of the dentist to make the society aware of this situation.

Keywords: Avulsion, Replantation, Traumatic Injury

INTRODUCTION

Tooth avulsion 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 [1-3]. It has been suggested that the avulsion of the tooth is briefly favoured by the malleability of the alveolar bone and thin structured periodontal ligament.

The permanent anterior teeth apart from being an essential component of the aesthetic zone, is also essential for day to day communication, mastication and psychological and mental health of children. Thus keeping this in mind, immediate replantation of an avulsed permanent tooth is often considered as the treatment of choice which can aid in enhanced self confidence and improved self perception of the children [4].

A moderately high prevalence of dental trauma in 6-11-year-old children (prevalence of avulsion: 5.83 per thousand children) was reported in a South Indian district wide oral health survey [5] as compared with an United Kingdom Children's Dental Health Survey [6] (prevalence of avulsion: 3.0 per thousand children).

Primary health centers, the basic unit of primary health care in India, do not have the provision for dental care. Owing to which many avulsed teeth are lost only because of lack of knowledge amongst the care takers 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.

Whenever the children suffered with an avulsed tooth, the parents or school children are the first one to provide them the attention required and very often the children is taken to a nearby medical practitioners for the primary management. To ensure proper and appropriate treatment 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 [7,8].

Few studies in literature assessed the knowledge of medical professionals regarding this situation [9-11] including two studies in South India carried out in Puducherry [12] and Telangana states of India [13]. However, no such study was carried out in Central India. Owing to this paucity in literature, the present study was designed to assess the knowledge and attitude of medical professionals in Nagpur city towards emergency management of an avulsed tooth in an attempt to impart the importance of avulsed tooth education in schools and medical colleges to increase the knowledge among teachers, parents and general physicians.

MATERIALS AND METHODS

The current study was a cross-sectional survey conducted in Swargiya Dadasaheb Kalmegh Smruti Dental college and Hospital, Nagpur amongst the medical practitioners in and around Nagpur city to assess their knowledge, awareness and practice management of avulsed tooth of the children. A nine item English-language questionnaire, which was a modified version of the questionnaire

used by Jyothi KN et al., was developed and pretested in a group of Pedodontists [14]. The final questionnaire consisted of nine multiple choice questions regarding the emergency management of an avulsed tooth meant to assess the knowledge regarding its meaning, immediate management, critical extra-alveolar time, optimal storage methods and media, proper cleaning technique of a grossly contaminated avulsed tooth before replantation and its proper handling [Table/Fig-1]. The survey was administered to the medical practitioners in various private and governmental hospitals, clinics, polyclinics in and around Nagpur.

A comprehensive search in Google database of medical practitioners was made in and around Nagpur city. In addition to this a manual list of doctors working in government hospitals and primary health centres was prepared. The search resulted in total 1125 medical professionals in and around Nagpur city out of which 1045 medical practitioners representing 92.88% of all practitioners took participation in the study over a period of five months starting in February 2016 using convenience sampling methodology. Four of the co-investigators participated in the data collection process and approached each of the prospective participants individually in person. The willingness of the medical practitioners was sought by completing the anonymous questionnaire and informed consent was obtained. No personal information on the practitioners' identities was required to be disclosed. Practitioners who were willing to participate were given the questionnaire, and after completion, they returned the questionnaire immediately to the co-investigators.

STATISTICAL ANALYSIS

The data obtained from the survey were manually entered into a Statistical Package for the Social Sciences database (IBM, SPSS version 20.0, IL, USA). Chi-Square test was used for data analysis with a significance level established at $p < 0.05$.

RESULT

A total of 1045 medical professionals responded positively to the given questionnaire in the present cross-sectional survey. The demographic characteristics of the study population are shown in [Table/Fig-2].

The responses of the participants to the questionnaire and their percentage were shown in [Table/Fig-3].

DISCUSSION

It was seen that more than half of the participants i.e., 56.8% had no prior knowledge regarding the management of an avulsed tooth. These findings were nearly similar to the study by, Abu-Dawoud M et al., Walker A et al., Venkataramana M et al., and Dali M et al., [9,10,13,15]. However, the findings of the present study seem quite lower than reported studies showing a fair knowledge of management of an avulsed tooth amongst the medical professionals in and around Nagpur city.

Almost, 95.4% of the practitioners amongst those who came across patients reported with an avulsed tooth preferred to refer the patient to dentist, which is quite higher with the results of K. Subhashraj K et al., (52%), Venkataramana M et al., (60%), Young C et al., (32.8%) [12,13,16]. These findings show a better rapport between the medical practitioners and dentists in the city.

The available literature regarding the use of storage medium shows a wide array of mediums to be used for an avulsed tooth like saline, milk, saliva. However, there has been no consensus suggested regarding the ideal storage medium. Majority of the participants (81.6%) of the present study lacks the knowledge regarding the transport medium and those who were aware, choose saline (59.7%) as the best storage medium, owing to its availability and known antibacterial action.

Sr. No	Questionnaire
I.	Meaning of an avulsed tooth? 1) Total dislodgement of intact tooth out of its socket. 2) Partial dislodgement of intact tooth out of its socket. 3) Dislodgement of fractured segment of the intact tooth. 4) Don't Know.
II	Any prior knowledge about management of avulsed tooth: 1) Yes 2) No If "Yes" what is the source of information: a) CDE programme. b) Health talks on TV, radio. c) Conference, convention. d) During tenure of medical course. e) Others.
III	Have you ever come across a patient with avulsion? 1) Yes 2) No If "Yes" what did you do? a) Refer to dentist. b) Try for replantation. c) Instruct patient to preserve tooth in saline until appointment. d) Discard the tooth.
IV	Do you ever heard about transport medium? 1) Yes 2) No If "Yes" what is the source of information a) CDE programme. b) Health talks on TV, radio. c) Conference, convention. d) Dentist Friend. e) Others.
V.	Best medium to preserve the tooth? a) Water b) Saline c) Saliva d) Milk e) Antiseptic f) Paper g) Don't know
VI.	Ideal time for replantation of the avulsed tooth a) 15 mins b) 30 mins c) 45 mins d) 1 Hour e) After few days f) Don't know
VII.	You encounter a patient with knocked out tooth and it is dirty, will you a) Wipe the tooth with a tissue paper. b) Clean the tooth with a tooth brush. c) Rinse the tooth gently under running tap water for a few seconds without scrubbing it. d) No need to clean the tooth because it is useless.
VIII.	How to hold an avulsed tooth? a) From the crown. b) From the root. c) Anywhere (crown or root). d) Don't know.
IX.	Would you care if avulsed tooth were primary tooth? 1) Yes 2) No

[Table/Fig-1]: Questionnaire.

Variables		Total N=1045, n (%)
Gender /Age (mean)	Male	718 (68.71)/34.45±12.36
	Female	327(31.29)/32.25±11.55
Educational qualification	Graduate	745 (71.29)
	Postgraduate	300 (28.71)
Current employment	Government	379 (36.26)
	Private	666 (63.74)

[Table/Fig-2]: Demographic characteristics of the study population.

"Replantation time" is a critical factor for the good prognosis of an avulsed tooth [17]. Periodontal cells integrity and tooth vitality are the main factors for tooth replantation which depends upon the extraoral time of an avulsed tooth. Andreasen JO et al., suggested that 90% of teeth replanted within 30 minutes did not develop root resorption and prognosis was better [7]. In our study, 64.7% practitioners were

Sr. No	Questionnaire	Total % (n)	X ² Value	p-value
I.	Meaning of an avulsed tooth? 1.Total dislodgement of intact tooth out of its socket 2.Partial dislodgement of intact tooth out of its socket 3.Dislodgement of fractured segment of the intact tooth 4.Don't Know	67.5 (706) 12.76 (133) 11.04 (115) 8.7 (91)	7.88	0.002*
II	Any prior knowledge about management of avulsed tooth 1. Yes 2. No If "Yes" what is the source of information a) CDE programme b) Health talks on TV, Radio c) Conference, convention d) During tenure of medical course e) Others	43.2 (451) 56.8 (594) 6.4 (29) 4.4 (20) 0 76.5 (345) 12.7 (57)	10.66	0.001*
III	Have you ever come across a patient with avulsion? Yes No If "Yes" what did you do? a) Refer to dentist b) Try for replantation c) Instruct patient to preserve tooth in saline until appointment d) Discard the tooth	37.2 (389) 62.8 (656) 95.4 (371) 3.4 (13) 0 1.2 (5)	12.8	0.0017*
IV	Do you ever heard about transport medium? 1.Yes 2.No If "Yes" what is the source of information a) CDE programme b) Health talks on TV, Radio c) Conference, convention d) Dentist Friend e) others	18.4 (192) 81.6 (853) 33 (63) 61.6 (118) 5.4 (11)	14.9	0.004*
V.	Best medium to preserve the tooth? a) Water b) Saline c) Saliva d) Milk e) Antiseptic f) Paper g) Don't knw	3.6 (38) 59.7 (624) 7.4 (77) 5.6 (58) 4.7 (49) 1.4 (15) 17.6 (184)	13.8	0.001*
VI.	Ideal time for replantation of the avulsed tooth a) 15 mins b) 30 mins c) 45 mins d) 1 Hour e) After Few days f) Don't know	4.4 (46) 6.5 (68) 2.56 (27) 16.4 (171) 5.4 (57) 64.7 (676)	9.49	0.04*
VII.	You encounter a patient with knocked-out tooth and it is dirty, will you a) Wipe the tooth with a tissue paper b) Clean the tooth with a tooth brush c) Rinse the tooth gently under running tap water for a few seconds without scrubbing it. d) No need to clean the tooth because it is useless	5.2 (54) 1.9 (20) 86.5 (904) 6.4 (67)	16.3	0.0021*
VIII.	How to hold an avulsed tooth? a) From the crown b) From the root c) Anywhere (crown or root) d) Don't know	48.7 (509) 17.6 (184) 7.2 (75) 26.5 (277)	20.3	0.01*
IX.	Would you care if avulsed tooth were primary tooth? 1.Yes 2. No	42.4 (443) 57.6 (602)	22.5	<0.023*

[Table/Fig-3]: Percentage wise distribution of responses.
Test applied : Chi-square test applied
p<0.05 considered as significant

unaware regarding the ideal time of tooth replantation whereas, 16.4% participants told that they would replant the tooth into the socket within one hour and only 6.5 % reported that they will replant it within 30 minutes. These findings were much lesser when compared to that obtained by Zhao Y and Gong Y where 88.5% of the participants responded that they replant the tooth within 30 min. The reason might be attributed to lack of knowledge regarding the same during their medical courses [18].

Knowledge of cleaning a knocked out dirty avulsed tooth is an important aspect to be kept in mind while dealing with an avulsion injury. In the present study, 78% participants preferred to clean the avulsed tooth under running tap water for few seconds without scrubbing it, but in the survey [19] conducted, it was reported that 89.5% participants would rinse the tooth under running tap water without scrubbing. This shows that our respondents were unaware that they were minimizing the chances of replantation.

Majority of the participants (57.6%) would not care if the knocked out tooth were primary. These findings were lesser as compared to the findings of Venkatramana M et al., (66.15) [13]. This shows that our participants were unaware that they can damage the permanent successor.

The findings of our survey highlight the present scenario of knowledge, attitude and practice of management of an avulsed tooth amongst them medical professionals. It was observed that there is lack of proper knowledge amongst the practitioners.

LIMITATION

Validity of the responses could be biased owing to the respondent's willingness to answer particular questions.

CONCLUSION

It can be concluded that, regardless of the level of education, the medical professionals in and around Nagpur were quite aware about an avulsed tooth but were lacking most of the knowledge required for emergency management of avulsed teeth and usually they preferred to refer the patient to the dentist for the same. In order to provide a proper management of an avulsed tooth, it is the need of the hour that the dentist should impart education to the parents, school teachers and general medical practitioners through health check up camps, Continuing Dental Educations (CDE) and Continuing Medical Education (CME) programmes. Also, it is suggested that the education regarding the same should be the part of schools and medical curriculum.

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