Brazilian Dental Science
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UNIVERSIDADE ESTADUAL PAULISTA "JÚLIO DE MESQUITA FILHO"
Instituto de Ciência e Tecnologia
Campus de São José dos Campos

ORIGINAL ARTICLE

doi: 10.14295/doi.2014.v17i2.935

# Evaluation of the emergency procedure in cases of dental avulsion among different professionals in the city of São José dos Campos-SP

Avaliação da conduta emergencial frente a casos de avulsão dental entre diferentes profissionais relacionados a este tipo de evento na cidade de São José dos Campos-SP

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## ABSTRACT

**Objective:** To assess the knowledge of the immediate action to be taken in cases of tooth extraction among professionals from different areas who witness this type of trauma in the city of São José dos Campos - SP, as well as guide them to the conduct immediately to be taken, since the prognosis of avulsed teeth element is directly related to the time it takes to replanted in respective alveolus. Besides the time factor, other factors such as management of the tooth, storage environment, treatment of the replanted tooth and preservation technique also have influence on the best prognosis. **Material & Methods:** For the development of the survey 50 professionals were randomly selected from the following professions: firefighters, doctors, nurses, teachers and dentists in different workplaces and from both genders. An evaluation was made through a questionnaire related to emergency treatment in cases of dental avulsion. The same was applied to all professionals, and questions were answered in the same period of time. **Results:** All data obtained was evaluated and a statistical analysis was performed. The professionals interviewed had low knowledge about the emergency procedure to be performed in cases of tooth avulsion **Conclusion:** Considering that part of the dentists are unaware of the appropriate techniques for this procedure, it was concluded that there is a great need for scientific and technical knowledge by this professional which would result in better patient care and more clarification on the subject the population.

## KEYWORDS

Tooth avulsion; Tooth extraction; Tooth replantation.

## RESUMO

**Introdução:** Analisar o conhecimento sobre a conduta imediata a ser tomada em casos de avulsão dental entre os profissionais de diferentes áreas que presenciam este tipo de trauma na cidade de São José dos Campos – SP, bem como orientá-los quanto à conduta imediata a ser tomada, uma vez que o prognóstico do elemento dental avulsionado está diretamente relacionado com o tempo que se leva para reimplantá-lo em seu respectivo alvéolo. Além deste, outros fatores como manejo, meio de armazenamento, tratamento do dente reimplantado, técnica de reimplante e preservação também influenciam no melhor prognóstico. **Material e Métodos:** Foram selecionados de forma aleatória 50 profissionais de cada uma das seguintes áreas: bombeiros, médicos, enfermeiros, professores e cirurgiões-dentistas, em diferentes locais de trabalho e de ambos os gêneros. Foi realizada uma avaliação através de um questionário relacionado ao tratamento emergencial em casos de avulsão dental. O mesmo foi aplicado para todos os profissionais e as perguntas foram respondidas no mesmo período de tempo. **Resultados:** Todos os dados obtidos foram avaliados e uma análise estatística foi realizada. Os profissionais entrevistados apresentaram baixo conhecimento sobre o procedimento de emergência que deve ser realizado nos casos de avulsão dental. **Conclusão:** Visto até mesmo que parte dos cirurgiões-dentistas desconhecem as técnicas adequadas para tal procedimento, concluiu-se que existe uma grande necessidade de conhecimento técnico e científico por parte deste profissional, o que resultaria em um melhor atendimento ao paciente e um maior esclarecimento sobre o tema à população.

## PALAVRAS-CHAVE

Avulsão dental; Trauma dental; Reimplante dental.

## INTRODUCTION

Of the various types of trauma, the avulsion, which is defined as the complete tooth dislocation from the alveolar bone, is one of the most prevalent injury, and statistical data link frequencies that range from 0.5 to 16% of the permanent dentition, and 7 to 13% in the deciduous dentition. Such injuries usually occur in children between 8 and 12 years old, and sports activities is the most common etiology affecting mainly male children. At this age, the structure of the periodontal ligament that supports the tooth still in eruption process is weakened and dental element has short roots and not fully developed [1].

When a tooth is avulsed, the periodontal ligament and cement layer cell is damaged, and the apical blood vessels are ruptured. Some of the factors that contribute to the long-term prognosis of the case are: stage of tooth development (especially root), extra-alveolar period, storage media when it is replanted, handling the tooth and type of fixation when it returns the cavity oral.

A survey conducted by clinical Hjorting-Andreasen & Hansen [2], and confirmed by Miranda [3] and Bittencourt [4] demonstrated that replanted teeth within a period of 30 minutes showed better success rates than those replaced after a long period extra oral, thus recommending the immediate replantation and subsequent endodontic treatment root.

Handling the tooth bythe crown and the stabilization with non-rigid fixation when it is repositioned, also contributes to promote the prognosis of avulsed teeth.

Complications can occur when a tooth is replanted such as necrosis or pulp obliteration, dental ankylosis, root resorption, failure to complete development of the dental root, failure reintegration of periodontal ligament fibers and loss the dental element. The loss of these elements can determine very large psychosocial impact, especially among teenagers [5]. Every effort should be made in order to restore the biological function and aesthetics of the avulsed tooth.

In 2000, Brenchley & Walker [6] published a paper reporting the aspects that should be considered in the dental replantation procedure immediately, and such aspects became undeniable when you want to restore quality of life to the traumatized patient. These reasons include: restoration of the psychological, functional and a esthetic patient and maintenance support of bone in the affected region. The objective of this study was to evaluate the knowledge of emergency procedure face to cases of dental avulsion among dentists, doctors, nurses, teachers and fire fighters in São José dos Campos.

## MATERIAL & METHODS

In the present study 250 professionals (50 firefighters, 50 doctors, 50 nurses, 50 teachers and 50 dentists), as describe in Table I, were randomly selected in different workplaces(public and private hospitals, public and private schools, health clinics, universities, fire department and dentist offices public and private), of both genders and aged between18 and 60 years, able to answer the questionnaire set out in frame 1.

Participants were classified as genre, age, education level and profession, and therefore not identified by names, surnames, nicknames or any other means which can identify the participant. Participants were also informed of the research objectives, informed consent was obtained.

After approval of the ethics committee 015/2009-PH/CEP this study aimed to see the several different professionals knowledge (doctors, dentists, nurses, teachers and firefighters) regarding what to do in case of dental avulsion. Questionnaires were completed from April to September 2009.

While filling the survey each participant had a period of 5 minutes to answer the 5 questions contained in the questionnaire described in

frame 1, during which time the participants had no access to any source of information about the subject matter that may change the data obtained, however, after completing the survey all the correct answers were explained to the participants, thus spreading the correct protocol emergency procedure to be taken in cases of dental avulsion.

All participants who delivered the questionnaires incompletely or exceeded the proposed time were excluded from the study.

The results of the questionnaires were expressed by frequency distributions and computed percentages. We carried out a comparison of results using Tukey's statistical analysis (5%).

**Frame 1 -** Questionnaire

Occupation _____

1 - Have you ever witnessed a situation of dental avulsion?
( ) Yes
( ) No

2 - How would you manage a situation of trauma followed by dental avulsion?
a) I would take the victim to a dental office and then return to the location of the accident to look for the tooth and give it to the dentist.
b) I would immediately replace the tooth in the alveolus and then take the victim to a dental office.
c) I would take the victim along with the tooth to a dental office, once I do not feel safe to solve the problem
d) I would take only the victim to a dental office and not worry about the tooth; because once the tooth has fallen on the floor it would be contaminated and therefore could not be used.
e) I would not know what to do.

3 - The period in which the tooth remained out of the alveolus:
a) Will interfere in the treatment, however, it is not the most significant factor
b) Will interfere slightly in the treatment
c) It is highly important, because will interfere significantly in the treatment
d) It is not important, because will not interfere in the treatment
e) I don't know

4 - Regarding how to handle the tooth during the period it remained out of the alveolus:
a) The tooth can be touched or handled by its root
b) If the tooth is dirty, it should be thoroughly washed (water and soap).
c) Even if the tooth is apparently clean, it should always be washed.
d) The tooth should only be touched or handled by its crown.
e) I don't know

5 - Where should the tooth ideally be stored until the victim is evaluated by a dentist?
a) The tooth should be kept in a dry environment (cloth, napkin, bandage)
b) The tooth should be stored in a liquid environment (water or saline solution).
c) The tooth should be stored in milk.
d) The storage will not interfere in the treatment
e) I don't know

## RESULTS

In order to know the number of professionals in each area that has seen an avulsion and dental assessment of correct answers obtained in this study, we performed a statistical analysis of the correct answers, according to the Tukey test (5%) for proportions performed in "Macro Multiprop" correlating all professionals who participated in the survey. Results are presented in figures according to each question.

The figure 1 shows that doctors differ from teachers, dentists and nurses; and firefighters differ from teachers, dentists and nurses.

The figures 2, 3 and 4 shows that dentists differ from other professionals.

The figure 5 shows that dentists differ from teachers, firefighters and nurses; and doctors differ from teachers and firefighters.

**Table 1 -** Demographic information regarding the gender of the participants

| DEMOGRAPHIC INFORMATION | | | | | | |
|---|---|---|---|---|---|---|
| **Profession** | **Male** | **%** | **Female** | **%** | **Total** | **%** |
| Firefighters | 49 | 98 | 01 | 02 | 50 | 100 |
| Dentists | 27 | 54 | 23 | 46 | 50 | 100 |
| Nurses | 03 | 06 | 47 | 94 | 50 | 100 |
| Doctors | 27 | 54 | 23 | 46 | 50 | 100 |
| Teachers | 15 | 30 | 35 | 70 | 50 | 100 |

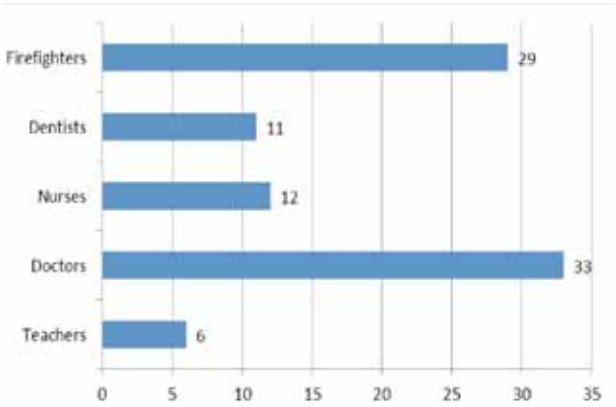


**Figure 1 -** Amount of professionals that already saw a dental avulsion

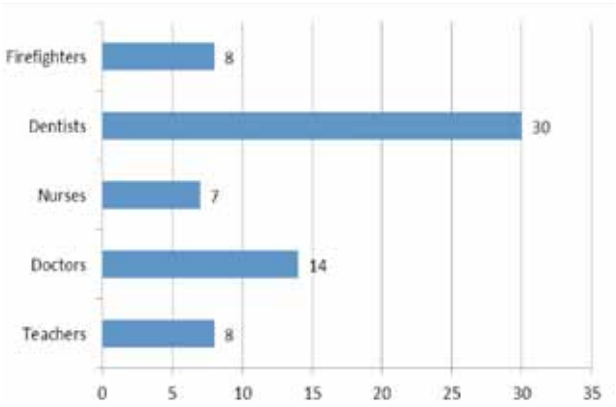


**Figure 2 -** Amount of professionals facing a trauma followed by dental avulsion and put back the tooth immediately in the alveolus and then takes the patient to a dental office

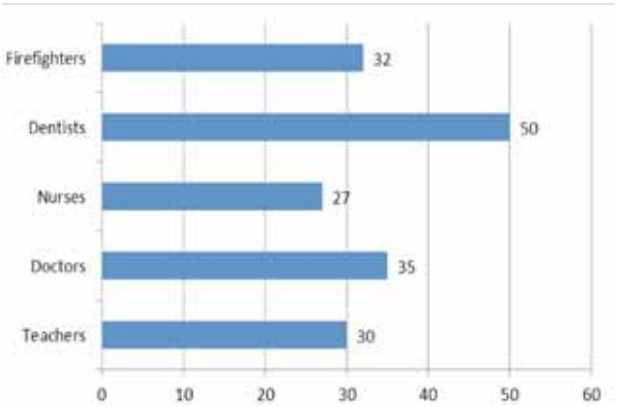


**Figure 3 -** Amount of professionals who answered that the time that the tooth remained out of its alveolus is very important because will interfere in the treatment success

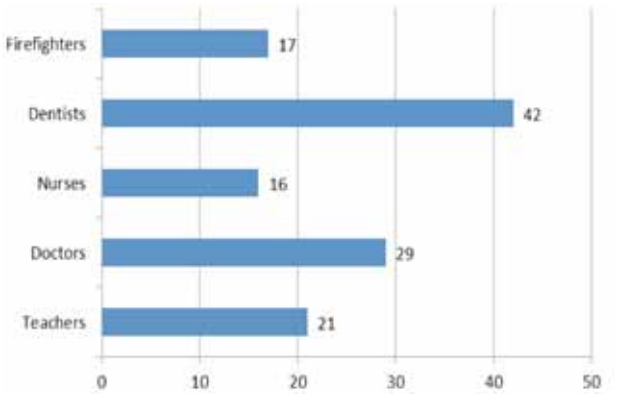


**Figure 4 -** Amount of professionals who answered that during the time the tooth is out of its alveolus, it should only be touched or handled by his crown

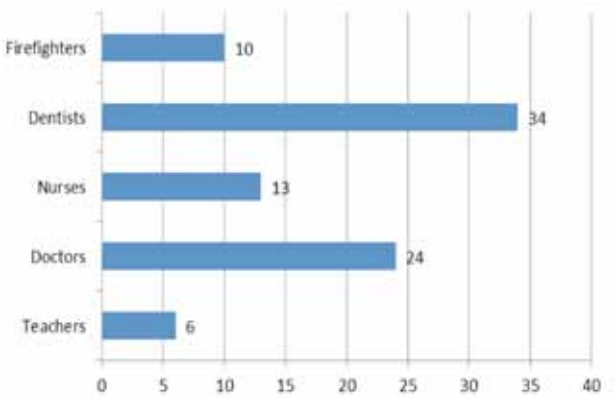


**Figure 5 -** Amount of professionals who answered that milk is the ideal tooth storage until the dentist treatment

## DISCUSSION

Teachers were interviewed in public and private schools from kindergarten, elementary, middle, daycare and fitness centers; fire fighters at the Fire Department of the Military Police of São José dos Campos - SP, dentists in private offices, in universities and centers of public health, and the doctors and nurses were interviewed in private offices, public and private hospitals and emergency care.

The professional's age ranged from 20 to 60 years, and 5 minutes was enough for all participants to answer the questions.

The private school teachers were who showed more interest in the subject matter, and the public school teachers were those who showed less interest. Nurses, doctors and firemen did not demonstrate much interest in the subject. Among dentists, despite already having knowledge of the subject, the majority proved quite receptive.

Dentist should guide the lay population about the correct action to be taken after the individual suffers a dental avulsion. These guidelines can be performed by posters and lectures addressing the importance of the tooth getting the shortest time possible out of its alveolus, the correct way to handle the tooth and the ideal way to transportation. Thus, this professional should have scientific expertise to guide the lay population in a situation of dental trauma that can treat the patient quickly and efficiently.

Only 22% of dentists (figure 6) had seen an avulsion. In case facing a trauma followed by dental avulsion, 4% would take the victim to a dental office and then return to the crash site to look for the tooth and give it to the dentist, 60% immediately restore it in the alveolus and then take the patient to a dental office and 36% would take the patient along with the tooth to a dental office, since they do not feel able to solve this problem (figure 7).

Regarding the length of time that the tooth remained out of its alveolus, 100% of (dentists) stated that time are very important, as it will interfere in the treatment success. Regarding how to handle the tooth, 16% reported that even if the tooth is apparently clean, it should always be washed and 84% reported that the tooth should only be touched or handled by his crown (figure 8).

Considering the ideal place for the tooth to be stored until evaluation by a dentist, 32% of these professionalsreported that the tooth should be stored in liquid ambient (water or saline solution) and 68% said they should be stored in milk (figure 9).

In similar results, Hamilton [7] reported that 94% of the interviewed would choose for milk as immersion solution for the avulsed tooth.

Marzola(8)reported that 79.08% of the interviewed would make immediate reposition; 98.47% hold by the crown; 40.31% immersed the tooth in the milk, 30.10% chosen the saline solution and 18.37% chosen the saliva.

According to the literature, some researches showed positive results with immediate reposition[2,9], however only 60% of the interviewed would perform this therapy.

The results reported the need for better disclosure of the appropriate treatment in cases of dental avulsion.

Dental avulsion can occur at school and teachers may be the first to have contact

with the child. It is very important that these professionals have adequate knowledge about emergency care to increase the success rate [10-13].

According to Andreasen [2], Miranda [3] and Vasconcelos [14], time in which tooth remains out of its alveolus is critical for the success of dental replantation. According to the authors Andreasen [15] and Vasconcelos [14] handling the tooth is important because it can modify the conditions of periodontal ligament cells and interfering in the prognosis may result in ankylosis. According to authors Blomlof [16], Moura and Rulli [17]; Velasco [18], Gonçalves [19]; Siviero [20] and Bittencourt [4], the storage is also vital to the success of treatment.

It was concluded that all interviewed showed low knowledge about the emergency care to be performed in cases of tooth avulsion. Part of the dentists are unaware of the proper treatment. There is still a great need for scientific and technical information among the dentists which would result in better patient care and more clear information about proper manage on an avulsed tooth for the population.

Thus after examining the results is important to enhance and create some areas of education and campaigns to inform what to do in a case of dental avulsion, especially in professionals work environments that were involved in this research.

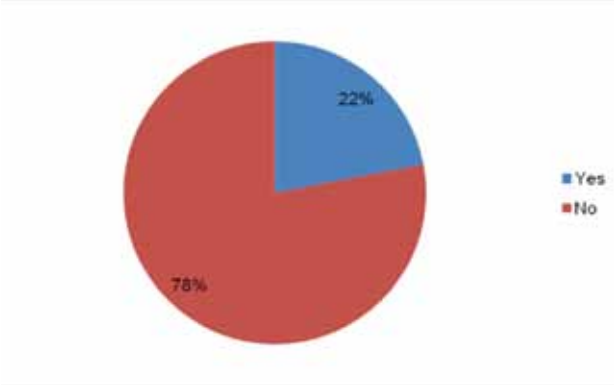


**Figure 6 -** Percentage of responses in dentists group on the question: Have you ever witnessed a dental avulsion?

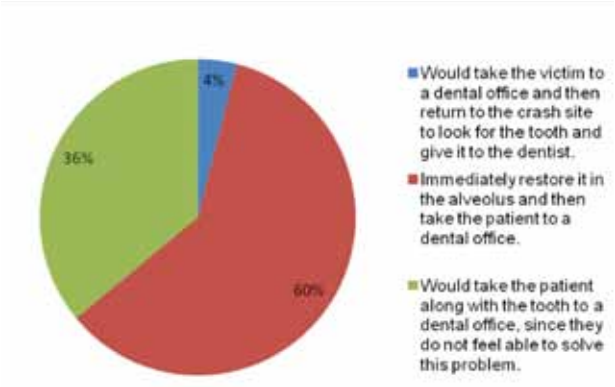


**Figure 7 -** Percentage of responses in dentists group on the question: What would be your behavior facing a trauma followed by dental avulsion?

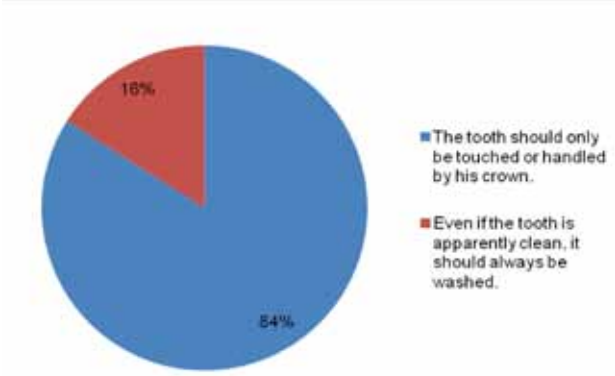


**Figure 8 -** Percentage of responses in dentists group on the question: Regarding the formhow to handle the tooth during the period that tooth remained out of alveolus:

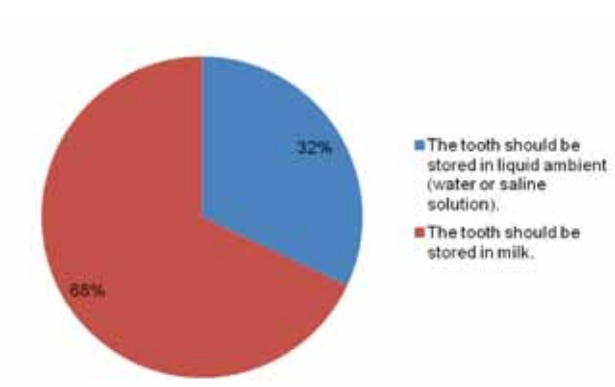


**Figure 9 -** Percentage of responses in dentists group on the question: What is the ideal place for the tooth to be stored until evaluation by a dentist?

## CONCLUSION

According to results and the methodology used in this research concluded that:

1) Although the dentists have a greater knowledge of dental avulsion, most professionals who witnessed such trauma were doctors and firefighters.

2) In an emergency situation where occurs a trauma followed by dental avulsion was found that among firefighters, nurses, doctors and teachers only a small percentage restore it once the tooth in the alveolus.

3) With regard time factor in the tooth remained out of the alveolus, it was found that most professionals have a significant knowledge on this factor. However, when compared among them according to the Tukey test, there was a statistically significant difference between the knowledge of dentists and other professionals.

4) As for how to handle the tooth while it remains out of its alveolus, it was concluded that only dentists have a significant knowledge on the subject.

5) Regarding to storage, it was found that doctors and dentists have more knowledge of the subject matter.

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Date submitted: 2013 Oct 24

Accept submission: 2014 Apr 14