

High School Coaches' Knowledge Regarding the Management of Acute Dental Trauma: A Qualitative Study

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Abstract

Background: In many cases, dental trauma is preventable. Timeous action should be carried out by persons on the field, including coaches and teachers. Organised sports carry a significant risk of oro- facial trauma. Most literature focuses on assessing the knowledge of coaches quantitatively. Thus, they have not explored in-depth what a coach would do in reality.

Objective: To assess coaches' knowledge regarding the acute management of dental trauma.

Material and Method: The hockey coaches from a single high school were approached for the study via an email survey. A total of eight coaches participated in the study. Coaches were requested to answer two questions regarding the management of acute dental trauma i.e. What would you do if part of an athlete's tooth fractured? What would you do if the whole tooth came out?

Results: There is a lack of general knowledge among coaches on how to manage crown fractures and tooth avulsion injuries.

Conclusion: The Department of Sports and Recreation should be involved in and responsible for a preventive plan of action for dental trauma. Schools need to have an emergency plan in place in the event of dental trauma. A clear plan of action should be customised for each school.

Keywords: High School Coaches' Knowledge; Regarding the Management; Dental Trauma: A Qualitative Study

Introduction

Dental trauma, especially in children and young adults, has been studied in several countries and high prevalence rates, between 11 and 60%, were reported [1]. 1 (Altay and Güngör, 2001). The incidence of dental trauma is said to increase among boys in public school [2-3]. (Garcia-Godoy *et al.*, 1986; Hamilton *et al.*, 1997). Most of these are injuries to the anterior teeth [4] (Kumamoto and Maeda, 2005). Several studies conducted elsewhere indicated a high prevalence of dental trauma among athletes [5-6]. (Andreasen, 1970; Sane, 1988) and reported that athletes experience at least one dental injury during their sporting careers [7] (Cohenca *et al.*, 2007).

The consequences of dental trauma on a paediatric patient could result in a lengthy, burdensome process as certain procedures may have to be postponed until adulthood. In many cases, dental trauma is preventable [8]. As for any preventable disease, prevention can be classified on several levels. Primary prevention endorses measures that aid in avoiding pathology development. Secondary prevention aims at preventing tooth morbidity following the traumatic event [8]. Nunn and Steele (2003) [9] identified three pillars that need to be combined to achieve this goal in the field of dental trauma. These involve accurate diagnosis along with efficient and appropriate treatment. This timeous action should be carried out by persons on the field and includes coaches and teachers [8]. Thus, coaches should

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have knowledge regarding management of dental trauma. Since organised sports carries a significant risk of oro-facial trauma [10], it was important to assess coaches knowledge regarding the acute management of dental trauma.

Coaches were asked questions about how they would manage crown fractures and tooth avulsion. The reason for selecting these two injuries is that crown fractures are the most common type of trauma [11] and avulsion is the “most serious dental event” [12] that can happen during organised sports.

A crown fracture can either be complicated (involving the pulp) or uncomplicated. If the pulp is exposed, salivary contamination complicates the pulpal status [13]. If a crown fracture is uncomplicated but extensively involves the proximal edges, pulpal damage can potentially occur if the treatment is delayed [14]. Lastly, if the pulp is not exposed, treatment options would then include either restoring the crown with appropriate dental materials or re-attaching the crown fragment [15]. The prognosis of an avulsion injury is highly dependent on the immediate actions that are taken at the site where trauma occurred [16]. Ideally, the tooth should be replanted immediately, with the best prognosis expected with reimplantation within twenty minutes [17]. Prognosis will largely deteriorate if the tooth is kept dry for more than an hour. Thus, extra-oral dry time and the appropriateness of the storage media are the major determinants of avulsed tooth survival [9]. Immediate referral to the dentist is mandatory [18].

Aim: To assess the knowledge of coaches on the management of acute dental trauma.

Methodology

The hockey coaches from a single high school were approached for the study via an email survey. The use of the email survey eliminated any possible intra-interviewer bias and the Hawthorne effect which refers to the fact that participants of a study behave or respond positively because they are being observed [19]. A senior coach distributed the questionnaires among other coaches and sent the completed forms back to the researcher. A total of eight coaches participated in the study. Ethical approval was obtained from biomedical ethical committee at the University of Western Cape. Nevertheless, informed consent was obtained from school principals and coaches participating in the study.

Most literature focuses on assessing the knowledge of coaches quantitatively [20-23]. Yet, they have not explored in-depth what a coach would do in reality. A qualitative study design was therefore selected. Coaches were requested to answer two questions regarding the management of acute dental trauma i.e.:

- What would you do if part of an athlete's tooth fractured?
- What would you do if the whole tooth came out?.

Results and Discussion

Two main themes were identified from the responses i.e. the steps taken to manage the traumatised tooth and the primary source of help sought at the time of the incident.

Obtaining health professional's assistance

Five of the eight coaches mentioned that they will immediately contact a health care professional for help. However, the means of seeking this help differed between coaches.

Two of the five coaches mentioned that they would obtain the assistance of health professionals by:

“calling emergency”

“Call the paramedic or first aid on site immediately. If none, then call the emergency services to send an ambulance or organise a way to take the athlete to the nearest hospital immediately”. “Will get the safety team out on the field, call 911 ….”

To some extent, this would be a fair response even though 911 is not the local emergency number in South Africa. Health professionals who are adequately trained can instruct coaches on how to manage an on-field injury such as how to replant an avulsed tooth or the suitable storage media to use prior to consulting a dentist. This approach can however possibly be a waste of valuable time and lead to a poorer prognosis, if there is no hotline number to access an emergency team that is equipped with the appropriate knowledge.

The Health Personnel Sought	Num Ber Of Coac Hes	Quotes
Dentist	1	<i>“Arrange for them to get to their dentist as soon as possible”</i>
Hospital	2	<i>“Advise the student or try and get him to a nearby hospital to get it checked out”</i> <i>“Organise a way for the child to get to the nearest hospital as soon as possible”</i>
Dentist or hospital	2	<i>“Send the kid to a dentist / ER”</i> <i>“Call the relevant party to take the athlete to doc/ dentist”</i>

Table 1: Responses of coaches who mentioned taking the athlete to a dentist or hospital.

One of the crucial factors for correctly managing dental trauma is knowing where to seek emergency care [16]. Taking the athlete to the dentist immediately is the most appropriate option. Taking the athlete to hospital implies seeking help from medical doctors and nurses. Unfortunately, these health professionals might not be aware of the immediate management of acute dental trauma. The patient would most likely be referred again to a dentist.

Contacting the parent

Four coaches mentioned they would contact the pupil’s parents immediately while at the sametime seeking assistance from a health professional. Only one coach said his management approach in the case of crown fracture would be purely parent-dependent, he said: *“Call parents of the athlete and advise”* According to the South African Children’s Act (2005) [24], parental consent is not necessary in cases where emergency treatment is required. The athlete can therefore be taken to the dentist immediately to evaluate the need for treatment. Informing the parent while preparing other arrangements to manage the tooth is acceptable, but delaying emergency management is not.

Coaches assessing or managing the trauma themselves

Even for an experienced dentist, clinical examination following dental trauma has to follow a specific protocol according to the International Association of Dental Traumatology [18]. In addition to the clinical examination, sensibility testing and radiographic examination are mandatory [25]. A coach does not possess the necessary expertise to be able to make an informed assessment of the situation. The same observation was made by Pacheco *et al.* (2003) [21] who studied the knowledge of school teachers in this regard. They found that teachers depend on their intuition rather than on knowledge to manage such situations.

Type of Dental Trauma	Methods Used to Manage the Situation
Crown fracture	<p><i>“Assess the damage and take steps from there (gauge whether a trip to the dentist is immediately necessary or not).”</i></p> <p><i>“Managing any bleeding / swelling on the scene”</i></p>
Tooth avulsion	<p><i>“Manage any bleeding / swelling on the scene, making sure that the kid is comfortable under circumstances”</i></p> <p><i>“... after putting the player at ease, then drive to the hospital (depending on severity).”</i></p> <p><i>“Advise athlete to rinse mouth, and apply pressure with wet toilet paper to prevent the bleeding (Keep head back) ...”</i></p>

Table 2: How the coaches would attempt to manage the trauma situation themselves.

Emergency kit

The emergency kit was mentioned by one of the coaches who said:

“We are fortunate to have first aid at our matches. I would get them to use tweezers...a protective container”.

After visiting the school, a coach was questioned about the emergency kit. While opening it she said:

“Unfortunately, we do not have any thing here for teeth. We had an accident two years ago when a student’s tooth came out, I opened the emergency kit and I found nothing useful”

As explained by Lang, *et al.* (2002) [26], having knowledge of the emergency kit is of paramount importance. The tooth rescue kit is an important step in the management of an avulsed tooth. It is especially valuable as it contains step-by-step instructions of what to do and how to use its components. It therefore promotes knowledge among coaches regarding the management of dental trauma [27]. All coaches should be aware of the contents of the emergency kit. Only one coach in the present study elaborated on how the school emergency kit could be used by mentioning the use of tweezers when handling an avulsed tooth. Certainly, avoiding touching the roots directly is advantageous [28].

The primary investigator of this study found that the kit available at the school was solely designed for injuries of the long bones and contained nothing that could possibly aid in dental trauma management. There was also no suitable container in which to transport a tooth if needed.

Actual management of the traumatised tooth

One coach showed slight discrimination between the management of a tooth fracture and avulsion. The difference was *“calling the paramedic or first aid on site immediately”* in the case of avulsion as opposed to only *“sending the athlete to hospital”* in the event of a crown fracture. The other three coaches’ management of crown fractures at the site varied widely from just calling the parent to assessing the need for help or managing bleeding on the scene before sending the athlete to a dentist. One coach mentioned taking the fractured part of the tooth with the pupil to the dentist.

Responses to the management of an avulsed tooth also varied from *“putting the child at ease and immediately take him to hospital”* to *“manage bleeding”* at the site as reported by two coaches. However, only two coaches mentioned taking the avulsed tooth with the injured

pupil to hospital. The first coach said that he will “*find the tooth first*” before taking the pupil to the hospital. The second coach said he would take the pupil to the dentist but before then....

“I would get them to use tweezers to pick the tooth up (carefully) and place it in a protective container”

If crown fractures and avulsion injuries are not managed timeously, significant pulpal inflammation can occur [25]. A survey by Chan., *et al.*, (2001) [20] in Hong Kong reported confusion among teachers when estimating the urgency to seek assistance from a health professional. This is in agreement with the findings of the present study.

Very few coaches mentioned taking the fractured crown or tooth with the pupil to the dentist. In a survey among eighty-seven teachers in two south European cities, only seven teachers mentioned that they would take the student together with the avulsed tooth to the dentist [23]. The numbers reported in Çağlar *et al.*'s [23] study could be an underestimation if one considers the ambiguity of the multiple choice questions in that particular study. Yet, this finding is comparable to the results of the present study.

None of the coaches mentioned replanting the avulsed tooth or transporting it in a suitable storage medium. Contrary to the findings of the present study, another survey among coaches found that 10 out of the 14 coaches were knowledgeable about tooth replantation in the case of avulsion [27]. However, the question ‘Do you know that it is possible to replant an avulsed tooth?’ used by Lang *et al.* [27] is a leading question which could either have a ‘yes’ or ‘no’ response. These responses cannot be compared to the open-ended question ‘What would you do if the whole tooth came out?’

Conclusion and Recommendations

In conclusion, there is a lack of general knowledge among coaches on how to manage crown fractures and tooth avulsion injuries. Several reports came to the same conclusion. Thus, it would seem as though the problem is universal. Prompt solutions are therefore required. Improving secondary prevention by improving the knowledge of coaches and educators dealing with children on the management of dental trauma is essential to ensure timeous treatment, improved immediate outcome and long term prognosis.

The Department of Sports and Recreation should be involved in and responsible for a preventive plan of action for dental trauma. They should be responsible for developing a reference website for dental trauma. This website should be linked to hotline numbers that allow coaches to obtain advice when dental trauma has occurred. These authorities should also be responsible of the development of a suitable emergency kit which contains an instruction leaflet that is translated into the major South African languages. This emergency kit should assist in improving the prognosis of a traumatised tooth until dental treatment can be sought.

Liaison between the Department of Sports and Recreation and the Department of Education can be beneficial to improve the roles of teachers and coaches in the prevention of dental trauma. First aid courses and sport science degrees are available for coaches and teachers in South Africa. Each school should have at least one certified coach for either of the aforementioned. Dental trauma education programmes should be included in coaches’ training. These programmes should include recommending appropriate mouth guards, and identifying cases at risk of dental trauma such as epileptic pupils [29]. Education programmes should also highlight consent issues regarding immediate treatment of dental trauma.

Schools need to have an emergency plan in place in the event of dental trauma. A clear plan of action should be customised for each school. This should include instructions of what should be done in the event of dental trauma, who to contact and where to take the injured pupil. Disseminating posters regarding the management of dental trauma among South African schools is recommended. According to Lieger *et al.* [30], this approach was found to be effective in improving teachers’ immediate response to dental trauma. Some literature [31-33] promotes the concept of school dentists who carry the responsibility of promoting mouth guards, identifying the cases at risk of

dental trauma and managing the trauma situation if needed. Although no studies have been conducted to prove its practicality compared to education of coaches, it can be applied when feasible. Having a dedicated dentist for each school would be invaluable.

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