

TRAUMATIC DENTAL INJURIES: ETIOLOGY, PREVALENCE AND POSSIBLE OUTCOMES

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Abstract: Traumatic dental injuries are significant public health problem because of its frequency, impact on economic productivity and quality of life. It is not a disease and no individual is ever at zero risk of sustaining these potentially life-changing injuries. Traumatic dental injuries occur most frequently in children and young adults. Older adults also suffer from traumatic dental injuries but at significantly lower rates than individuals in the younger cohorts. Luxation injuries are the most common traumatic dental injuries in the primary dentition, whereas crown fractures are more commonly reported for the permanent teeth. Proper diagnosis, treatment planning and follow up are very important to assure a favorable outcome. The aim was to overview the etiology, prevalence and possible outcomes of dental trauma. An electronic search of Medline (PubMed), Cochrane, SSCI (Social Citation Index), SCI (Science Citation Index) databases from 2000 to the present, using the following search words: tooth injuries, tooth trauma, traumatized teeth, dental trauma, dentoalveolar trauma, oral trauma, epidemiology, etiology, prevalence, prevention, pulp necrosis, inflammatory resorption, ankylosis, cervical resorption, was performed. The current revision represents the best evidence based on the available literature and expert opinions. During last decade traumatic dental injuries were recognized as public dental health problem worldwide. Prevalence of traumatic dental injuries varies between countries. According to the existing data they are more prevalent in permanent than in primary dentition. All treatment procedures in case of dental trauma are directed to minimize undesired consequences despite that treatment of traumatic dental injuries in the young patient is often complicated and can continue during the rest of his/her life. The changing lifestyle and requirements of modern society lead to an emergence of new patterns of dental trauma. Successful treatment of traumatic injuries depends on timely action by the patient and a quick and accurate diagnosis by the dentist. Although most injuries are minor and of an urgent nature, displaced or missing teeth are true emergencies. The mismanagement of traumatic dental injuries has provided much information as well as questions for research that have resulted in the increased retention of teeth with as little treatment as possible. Maintaining pulp vitality when possible, utilizing the therapeutic effects of calcium hydroxide, and returning teeth to function as soon as possible are keys to predictable prognosis. It is the responsibility of the dentist to stay current on the latest techniques available to treat traumatic injuries. The charts included provide most of the potential emergency treatment possibilities, recommended follow-up treatment, and final treatment outcomes essential to providing the best care for our child patients. It is also the responsibility of the dentist to use evidence-based research when adopting treatment protocols.

Keywords: *traumatic dental injuries, dental trauma, permanent dentition, primary dentition*

Field: *Medical sciences and Health*

INTRODUCTION

Traumatic dental injuries are the result of impact injuries to the teeth and/or soft and hard tissues within and around the vicinity of the oral cavity and pose a very serious public health dilemma. Traumatic dental injuries are significant public health problem because of its frequency, impact on economic productivity and quality of life. It is not a disease and no individual is ever at zero risk of sustaining these potentially life-changing injuries. Traumatic dental injuries occur most frequently in children and young adults. Older adults also suffer from traumatic dental injuries but at significantly lower rates than individuals in the younger cohorts. Traumatic dental injuries (TDIs) of permanent teeth occur frequently in children and young adults. Crown fractures and luxations of these teeth are the most commonly occurring of all dental injuries. Proper diagnosis, treatment planning, and follow up are important for achieving a favorable outcome. Guidelines should assist dentists and patients in decision making and in providing the best care possible, both effectively and efficiently.

The International Association of Dental Traumatology (IADT) has developed these Guidelines as a

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consensus statement after a comprehensive review of the dental literature and working group discussions. Experienced researchers and clinicians from various specialties and the general dentistry community were included in the working group. In cases where the published data did not appear conclusive, recommendations were based on the consensus opinions of the working group. They were then reviewed and approved by the members of the IADT Board of Directors. These Guidelines represent the best current evidence based on literature search and expert opinion. The primary goal of these Guidelines is to delineate an approach for the immediate or urgent care of TDIs (Traumatic dental injuries).

AIM OF THE STUDY

The aim was to overview the etiology, prevalence and possible outcomes of dental trauma.

MATERIALS AND METHODS

An electronic search of Medline (PubMed), Cochrane, SSCI (Social Citation Index), SCI (Science Citation Index) databases from 2000 to the present, using the following search words: tooth injuries, tooth trauma, traumatized teeth, dental trauma, dentoalveolar trauma, oral trauma, epidemiology, etiology, prevalence, prevention, pulp necrosis, inflammatory resorption, ankylosis, cervical resorption, was performed.

RESULTS

The current revision represents the best evidence based on the available literature and expert opinions. During last decade traumatic dental injuries were recognized as public dental health problem worldwide. Prevalence of traumatic dental injuries varies between countries. According to the existing data they are more prevalent in permanent than in primary dentition. Tooth injuries are proven to cause physical, social as well as economic consequences. The most frequent type of injury in primary dentition is avulsion, whereas crown fractures are most common in permanent dentition. TDIs occur most often at home and in school. Certain risk factors for TDIs were identified which include, among others, male gender, younger age, obesity. The updates of the International Association of Dental Traumatology's (IADT) Guidelines include a comprehensive review of the current dental literature using EMBASE, MEDLINE, PUBMED, Scopus, and Cochrane Databases for Systematic Reviews searches from 1996 to 2019 and a search of the journal Dental Traumatology from 2000 to 2019. The goal of these guidelines is to provide information for the immediate or urgent care of TDIs. It is understood that some follow-up treatment may require secondary and tertiary interventions involving dental and medical specialists with experience in dental trauma. As with previous guidelines, the current working group included experienced investigators and clinicians from various dental specialties and general practice. The current revision represents the best evidence based on the available literature and expert opinions. Traumatic dental injuries (TDIs) occur frequently in children and young adults, comprising 5% of all injuries. Twenty-five percent of all school children experience dental trauma and 33% of adults have experienced trauma to the permanent dentition, with the majority of the injuries occurring before age 19. Luxation injuries are the most common TDIs in the primary dentition, whereas crown fractures are more commonly reported for the permanent teeth. All treatment procedures in case of dental trauma are directed to minimize undesired consequences despite that treatment of traumatic dental injuries in the young patient is often complicated and can continue during the rest of his/her life. The changing lifestyle and requirements of modern society lead to an emergence of new patterns of dental trauma. Successful treatment of traumatic injuries depends on timely action by the patient and a quick and accurate diagnosis by the dentist. Although most injuries are minor and of an urgent nature, displaced or missing teeth are true emergencies.

DISCUSSION

Guidelines published by the International Association of Dental Traumatology include practical recommendations for first aid after avulsion. Permanent teeth should be replanted immediately at the accident site, whereas primary teeth should not be replanted when avulsed. Broken teeth fragments ought always to be collected if possible. After dental trauma it is vital that the patients seek professional help. Measures preventing TDIs (e.g., mouthguards) should be encouraged. It is of great importance that parents, teachers, guardians or bystanders witnessing a TDI are equipped to assist after a dental trauma or give advice on first aid when needed. It is understood that guidelines are to be applied using careful

evaluation of the specific clinical circumstances, the clinician's judgment, and the patient's characteristics, including the probability of compliance, finances and a clear understanding of the immediate and long-term outcomes of the various treatment options vs non-treatment. The IADT does not, and cannot, guarantee favorable outcomes from adherence to the Guidelines. However, the IADT believes that their application can maximize the probability of favorable outcomes. The mismanagement of dental traumatic injuries has provided much information as well as questions for research that have resulted in the increased retention of teeth with as little treatment as possible. Maintaining pulp vitality when possible, utilizing the therapeutic effects of calcium hydroxide, and returning teeth to function as soon as possible are keys to predictable prognosis. It is the responsibility of the dentist to stay current on the latest techniques available to treat traumatic injuries. The charts included provide most of the potential emergency treatment possibilities, recommended follow-up treatment, and final treatment outcomes essential to providing the best care for our child patients. It is also the responsibility of the dentist to use evidence-based research when adopting treatment protocols.

CONCLUSIONS

The findings of this report also stress the importance of prevention of dental trauma and minimize its complications through proper treatment, educational programs, supervision of children during play, use of mouth guards, and orthodontic treatment of proclined incisors.

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