

Sports Dentistry: A Review

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Abstract:

Trauma occurring in developing years disrupts normal social functioning and brings about a major impact on quality of life due to their cumulative effect. Dental trauma in sports differ from other dental trauma as it is possible to easily prevent it and there is also the possibility to dramatically reduce the occurrence of injury by use of mouth guard that protect all dental and periodontal structures. Recommendations for the public when responding to dental trauma in young children should include the measures like wash the wound with plenty of running water.

Key words: Sport Dentistry, Pediatric Sports, Facial Trauma.

Introduction

Vigorous physical activities as well as competitive athletics offer sports men and women a variety of health benefits. However, participating in such activities contribute to a major part of sports related injuries in children. Trauma occurring in developing years disrupts normal

social functioning and brings about a major impact on quality of life due to their cumulative effect. Dental trauma in sports differ from other dental trauma as it is possible to easily prevent it and there is also the possibility to dramatically reduce the occurrence of injury by use of mouth guard that protect all dental and periodontal structures. (1,2)

Hence sports dentistry has evolved as an independent sub-specialty during the last decade. It has expanded much beyond its traditional image of being limited to mouth guard fabrication and treatment of fractured teeth. There has been an evolution in the concept of identification of cause, treatment and prevention of dental injuries and diseases related to sports community at both recreational and organized level. (3) Sports dentistry began in the 1980s and focuses on preventing and treating or facial athletic injuries and related oral diseases. (4) It is known that majority of dental injuries is seen in children between ages of 8 and 11 years. The frequency of dental trauma is significantly higher for children with increased over jet and inadequate lip coverage. (5)

Hence observing this need for expanding and disseminating knowledge about this field of dentistry, and due to scarce studies about sports dentistry, the objective of this library dissertation is to define the role of professionals, focus on the prevention methods and frequent risk situations that involve athletes. (6)

EPIDEMIOLOGY

It has been widely reported that participation in sports exposes a person to risk of sustaining dental injury. (7) The frequency and intensity of the contact during competitions can sometimes be the main cause of dental injury. (8) The type of contact can be classified as direct contact with competitors (taekwondo, jiu-jitsu, kickboxing, boxing, etc.) indirect contact with rival competitors (handball, basketball, football, soccer, ice hockey, etc.) and no contact with rival competitors (volleyball, badminton, etc.) during the activity. (9)

A universal finding is that the injury to the central incisors accounts to 80% of the injuries affecting maxillary jaw. In children, the incidence of injuries from sports accidents is maximum in the age group of 8-11 years. (10) Boys are more likely than girls to be injured; with the ratio being 1.5:3.1. Adding significance to the above-mentioned figures is the fact that most of the school teachers are not aware about the adequate measures to be

taken to deal with such injuries. Garcia-Godoy observed a male:female ratio of 0.9:1.0 in a study from three private schools in the Dominican Republic, and 1.1:1.0 in another study in public and private school children, the sex distribution was not significantly different. (11)

More than 5 million teeth are avulsed each year; many during sports activities, resulting in nearly \$500 million spent on replacing these teeth each year. In an issue of the Journal of the American Dental Association (JADA) it was reported that 13- 39% of all dental injuries are sports-related, with 2-18% of the injuries related to the maxillofacial. (12)

In Alabama, a study on 754 football players revealed that 52% of all orofacial injuries occurred in sports other than organized football. Basketball, baseball and unorganized football were a few of the sports which showed a high incidence of oral trauma and concussions when mouthguard were not used. (13) Morrow and Kuebker conducted surveys in selected Texas high schools to determine the incidence of orofacial injuries on approximately 122,000 male and female athletes. They measured the types of mouthguard worn and dental injury experienced in football, and later indicated that soccer and basketball had higher dental injury rates than football. (14) An athlete has a 10% chance of receiving an orofacial injury every season of play. In addition, athletes have a 33%-56% chance of receiving an orofacial injury during their playing career. (15)

DISTRIBUTION BY AGE AND GENDER

Studies have shown that males experienced traumatic dental injuries at least twice as often as females. The male:female ratio varies from 1.5:1.0 to 2.5:1.0. Such ratio could be attributed to a greater participation of boys in contact sports, fights and car accidents. Also, it could be related to the fact that girls are generally more mature in their behaviors than boys, who tend to be more energetic and active.(16) However, some of the studies have shown a reduction in the gender ratio which might be due to increased sports activities among girls. Altun et al. observed some association between gender and type of injury, that boys more often suffered from dental hard tissue and pulp injury than girls. Lam et al. up to 92% of traumatic dental injuries occur before the age of 34 year. Distinct age groups are determined and majority of injuries occur in the 0 to 4, 5 to 9 and 10 to 14 years age groups. (17)

Table III: Distribution by cause, type and location of injury

Author	Cause/where injury occurred(%)	Type of injury (%)	Dental location (%)
Perez et al	Falls (46.0) Fights (14.0) Road traffic accidents (13.0) Accident (12.0) Bicycle (8.0) Sports (5.0) Child abuse (1.0)	Soft tissue injury (58.0) Displacement (62.0) Alveolar fractures (5.5) Sensitivity to percussion (37.0) Direct extrusion from socket (29.0) Intrusion into socket (12.0) Avulsion (22.0)	Not given

Author	Cause/where injury occurred (%)	Type of injury (%)	Dental location (%)
Davis and Knott	All sport (33.5) Bicycle/tricycle (15.7) Assault (10.2) Road traffic accidents (5.1)	Crown fracture not involving pulp (58.0) Crown fracture involving pulp (13.7) Crown and root fracture without pulp (1.2) Crown and root fracture with pulp (8.5) Subluxation (23.0) Displacement (7.9) Avulsion (5.2)	Maxillary central incisor (66.6) Maxillary lateral incisor (15.7) Mandibular central incisor (9.8) Mandibular lateral incisor (7.87)
Liew and Daly	Falls (26.6) Sports (18.0) Bicycle (14.2) Assault/fights (13.3) Struck by object (9.4) Road traffic accidents (8.2) Pool/surf (5.6) Collision/bump (4.7)	Primary Luxation (46.9) Permanent Crown fractures without pulp (25.0) Luxation (23.5)	Primary Maxillary central incisors(66.3) Maxillary lateral incisors(18.9) Permanent Maxillary central incisors (55.8) Maxillary lateral incisors (18.8) Maxillary canine (3.5)

Martin et al	Falls (26.0) Sport (team) (16.0) Bicycle (15.0) Fights (13.0) Road traffic accidents (9.0) Collision (8.0)	Luxation (26.0) Crown fracture not involving pulp (25.0) Subluxation (16.0) Avulsion (13.0) Crown fracture with pulp (11.0) Crown root fracture (4.0) Root fracture (4.0)	Maxillary central incisors (63)
Caliskan and Turkun	Undefined falls (45.0) Sport (22.6) Road traffic accidents (11.3) Violence (11.3) Miscellaneous (9.7)	Enamel dentine fractures were the most common injury	Maxillary central incisors (66.2) Maxillary lateral incisors (21.1) Mandibular central incisors (8.5) Mandibular lateral incisors (4.1)
Naveen Kumar et al	41.1% were aware of the possibility of oral injuries	55.4% knew about mouthguards	Maxillary anterior teeth

OUTCOME OF TRAUMATIC DENTAL INJURIES

The most favorable outcome of traumatic dental injuries is healing of the pulp and surrounding tissues. However, traumatic dental injuries are often accompanied by complications of different types and severities like: pulp necrosis, apical periodontitis, discoloration of tooth crown, fistulas, external inflammatory root resorption. The outcome of dental trauma depends on the type of injury, time prior emergency treatment, and quality of treatment. Consideration must be given to the fact that complications of dental trauma can occur several months or even years after the injury. (18)

Traumatic dental injuries to the hard dental tissues and the pulp such as uncomplicated or complicated crown or root fractures could be accompanied by pulp necrosis. The consequences of traumatic dental injuries to the surrounding tissues of the tooth, in case of avulsion or intrusion injuries, can be even more serious, e.g. various types and degrees of root resorption could be expected.

Traumatic dental injuries like infraction, enamel fracture, uncomplicated or complicated crown fracture represent different possible pathways for bacteria to enter pulp space and to become a cause of pulp inflammation and necrosis. (19)

Conclusion

Recommendations for the public when responding to dental trauma in young children should include the measures like wash the wound with plenty of running water. Generally, dental trauma includes injuries to the adjacent soft tissue. Stop bleeding by compressing the injured area with gauze or cotton wool for 5 minutes. Seek emergency treatment from a pediatric dentist.

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