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Prevalence and severity of traumatic injury of permanent anterior teeth among 7–15 years old children in Mosul City

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ABSTRACT

The aims of this study were to determine the prevalence and severity of traumatic dental injuries of permanent anterior teeth among children in Mosul City, and to find if there is any variation between age and sex groups.

A sample of 209 children aged 7–15 years old (112 males and 97 females) was examined using Garcia–Godoy classification in the diagnosis of traumatic dental injuries.

The results showed that the upper central incisors were the most commonly injured teeth (60%) followed by the lateral incisors (35%). No case of injured canine was recorded. The lower lateral incisors reported the very little average (1%).

The results also showed that the most common type of dental injuries was the simple enamel fracture (43.7%).

Key Words: Dental injuries, trauma, permanent dentition.

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INTRODUCTION

Tooth trauma has been, and continues to be, a common occurrence that every dental professional must be prepared to assess and treat when necessary.[1] Trauma to children's teeth occurs quite frequently than adults,[2] with the fact that the frequency of traumatized teeth increase with the increase of age till the age of 12 years.[3] Traumatic injuries are twice as common in boys in both the permanent and primary dentitions.[2,3]

The major causes of these injuries vary considerably and include accidents in and around the home, falls during normal play, injuries sustained during sport, and injuries as a direct result of violence.[2, 4]

Dental injuries include fractures, luxation, avulsion, socket fracture and associated trauma. Tooth fracture disrupt the enamel or cementum and may involve dentin or pulp. They are typically caused by a direct blow to the tooth or by indirect blow transmitted through the jaw.[5]

Luxation is the displacement of the tooth from its normal position. Teeth may be laterally luxated, extruded or intruded.[6, 7] Avulsion is a total separation of the tooth from the socket.[8, 9] All of the previously described injuries could be associated with other types of maxillofacial trauma.[10]

Physicians must recognize each injury type to provide proper initial treatment and refer more seriously injured patients to the emergency department, team dentist, or other dental professionals.[11]

Teeth have a limited capacity to heal, and therefore are unlike other body tissues. If restorable, broken or avulsed teeth often require root canal therapy and prosthodontic (crown, partial dentures), repair or replacement.[11, 12] Therefore, if injuries treated correctly on the field, injured patients can avoid complication such as poor cosmesis, infection and extensive dental reconstruction.[12, 13]

For a parent, seeing a child loses a tooth in an accident could be gut wrenching. Such injuries are often bloody and anxiety provoking for the child as well. Knowing how to prevent dental injury and what to

do in case your child's teeth are damaged in an accident, can save your child's teeth and ensure a beautiful life–long smile.[8]

The purposes of this study were to estimate the prevalence and severity of traumatic dental injuries to the permanent anterior teeth in children and to find if there is any variation between age and sex.

MATERIALS AND METHODS

This study was conducted in Mosul City during the period between January 2003 to January 2004.

The sample of the study was composed of 209 children aged 7–15 years old and of both sexes (112 males and 97 females) randomly selected from different location areas in Mosul City (rural and city center). The sample was divided into 3 age groups in 2 years interval.

The clinical examination was carried out under natural daylight, using mouth mirrors and probes to detect exposure point. Traumatic injuries to the maxillary and mandibular permanent incisors were recorded according to Garcia–Godoy's classification.[14, 15] This classification includes enamel fracture, enamel–dentin fracture, crown fracture with pulp exposure, enamel–dentin–cementum fracture, root fracture, concussion, luxation, intrusion, extrusion and avulsion.

Questionnaire have been asked to parents including child's name, age, sex, previous dental treatment, cause of injury, time of trauma and all information were recorded on a special form. X–ray had been taken to all patients excluding those with enamel fracture and vitality of all teeth had been checked manually.

The statistical analysis of the data was performed using chi–square test.

RESULTS

Table (1) presented the distribution of sample examined by age and sex. Table (2) showed the number of injured teeth from total number of examined teeth. Males exposed to trauma more than females with no significant difference between them as shown in Table (3).

The results showed that for permanent anterior teeth, the upper central incisors were the most commonly injured teeth followed by the upper lateral incisors; no case of injured canine was reported. The lower lateral incisors reported in very little average as in the Figure.

Table (1): Distribution of sample examined by age and sex

Age Group (Year)	Male		Female		Total	
	No.	%	No.	%	No.	%
7–9	25	55.6	20	44.4	45	100
10–12	40	50.6	39	49.4	79	100
13–15	47	55.3	38	44.7	85	100
Total	112	53.6	97	46.4	209	100

Table (2): Number of injured teeth and normal examined teeth

Age Group (Year)	Sex	Total No. of Examined Teeth	Fractured Teeth	Normal Teeth
7–9	Females	240	33	207
10–12		468	59	407
13–15		456	71	385
7–9	Males	300	42	258
10–12		480	69	411
13–15		564	90	474

Table (3): Difference between age group

Age Group (Year)	Male		Female		Total	
	No.	%	No.	%	No.	%
7–9*	42	56	33	44	75	100
10–12**	69	53.9	59	46.1	128	100
13–15***	90	55.9	71	44.1	161	100
Total******	201	55.2	163	44.8	364	100

* Chi–square = 0.007; df= 1; Not significant.
** Chi–square = 0.034; df = 1; Not significant.
*** Chi–square = 0.028; df = 1; Not significant.
**** Chi–square = 0.456; df = 1; Not significant.

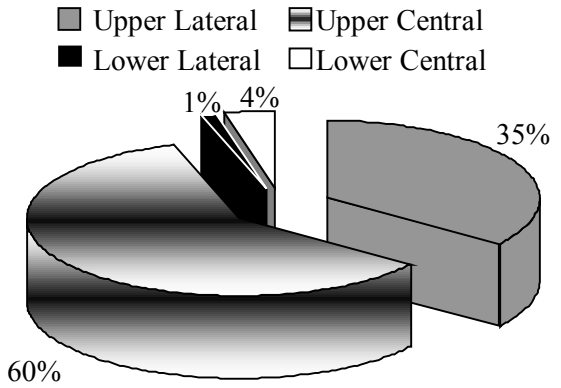

Figure: The percentage of tooth fracture among the permanent anterior teeth

There was no significant difference between age group in exposure to trauma. The larger age more exposed to traumatic injury than smallest one (Tables 3 and 4).

The simple enamel fracture was the commonest type of dental injury (43.7%) followed by the enamel and the dentin fracture (27.8%), the enamel and the dentin fracture with pulp exposure (24.5%) followed by other injury types (Table 5). It has been found that the direct trauma was the most common cause of injury and the person in the city center exposed to the anterior teeth injury more than that in the rural area.

Table (4): Number of injured teeth in each age group by sex

Age Group (Year)		No. of Injured Teeth by Sex		Total No. of Injured Teeth	
		No.	%	No.	%
7–9	**Males**	42	11.5	75	20.6
	Females	33	9.1		
10–12	**Males**	69	19.0	128	35.2
	Females	59	16.2		
13–15	**Males**	90	24.7	161	44.2
	Females	71	19.5		

Table (5): Distribution of injured teeth by classification of injury

Class of Injury	Injured Teeth	
	No.	%
Enamel Fracture	159	43.7
Enamel–Dentin Fracture	101	27.8
Enamel–Dentin Fracture with Pulp Exposure	89	24.5
Enamel–Dentin–Cementum Fracture without Pulp Exposure	0	0
Root Fracture	3	0.8
Concussion	2	0.5
Loosening	6	1.6
Intrusion	1	0.3
Extrusion	2	0.5
Avulsion	1	0.3
All Types of Injuries	364	100

DISCUSSION

Table (2) showed the number of injured teeth from total number of examined teeth. The results showed that the dental injuries are very common. These results are in agreement with other studies.[7–11]

Table (3) showed the number of injured teeth in each age group by sex; the results showed that males exposed to trauma more than females. This result was in agreement with the findings of other investigators.[3, 16] This may be attributed to the nature of their activities which is more than girls also after age of 10 years puberty and the girls are not allowed to play freely outside the house but instead are usually involved with household activities and controlled social gatherings.

Tables (3) and (4) showed that larger age more exposed to trauma than smallest one with no significant difference between them for both sexes. This is due to exposure of child to high risk unsupervised athletic activities with increasing age especially when the child is submitted to the school. This result is in agreement with many studies.[2–5]

The study demonstrated that the simple enamel fracture was the most common type of injury followed by enamel and dentin fracture, enamel and dentin fracture with pulp exposure, followed by other types (Table 5). These results were in agreement with many studies in different countries.[3, 16–18]

According to this study, the upper central incisors were the most commonly injured teeth followed by the upper lateral incisors; no case of injured canine. The lower lateral incisors reported in very little average. This was in agreement with other studies.[16, 19–21]

According to this study, the person in city center exposed more than that of rural to traumatic injury. This was in agreement with other study.[3] The differences between the city center and rural could be due to environmental variations in child care and in the type of games played by the children.

CONCLUSION

Trauma to the permanent dentition is a common experience. The prevention of oral trauma and the maintenance of a healthy complete dentition for life should be the aim of any caring parent and dental practitioner; young children's play should be supervised.

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