

## Prevalence of dental trauma of permanent anterior teeth in children visiting College of Dentistry/Hawler Medical University

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### Abstract

**Background and objectives:** The aim was to study the distribution of traumatic dental injuries in the permanent anterior teeth among 7-12 years old children treated in the Department of Pediatric Dentistry/ College of Dentistry at Hawler Medical University, Erbil, Iraq.

**Methods:** In this retrospective clinical study the case records of 1868 patients were reviewed and only patients with traumatic dental injuries were included. Type of tooth injury was classified according to modified Ellis and Davey<sup>12</sup> crown fracture. Data on age, gender, number of injured teeth and type of injury were also collected from the dental records for the period 2007-2009.

**Results:** Records of 1868 examined children showed that the prevalence of traumatic dental injury was 4.5% (84). Of those 84 patients, 60.7 % ( 51) were boys and 39.3 % ( 33) were girls with male/female ratio 1.55: 1. The highest frequency of tooth injuries occurred among 9-10 years old children. Single tooth injury was found in 84.5% of the cases, while 15.5% had two teeth injury. Traumatic injuries affecting teeth in the upper jaw were more frequent. The most frequent injuries were class II crown fracture (47.4%), followed by class III (40.2%), class IV (11.4%) and class I (1%) respectively.

**Conclusion:** The prevalence of dental trauma is relatively low. More attention should be paid to preventive measures, which includes wearing mouthguards, especially in the early stages of psychophysical growth of male population.

**Key words:** dental trauma, prevalence, permanent anterior teeth.

### Introduction

A majority of dental injuries happen in children. Traumatic injuries of permanent teeth can appear rather severe, particularly when associated with trauma to supporting tissues<sup>1</sup>. Dental trauma that results in fractured, displaced or lost teeth can have significant negative functional, esthetic and psychological effects on children<sup>2</sup>. The distribution of traumatic dental injuries varies in different periods of life. The most frequent traumatic dental injuries occur between 2 and 4 years and between 8 and 10 years of age in both genders<sup>3-8</sup>. A majority

of traumatic dental injuries involve only one permanent tooth and the most frequently affected are the maxillary central incisors<sup>7,8</sup>. The most frequent types of traumatic dental injuries to permanent teeth are enamel fractures, enamel and dentine fractures<sup>9</sup>, and enamel and dentine fractures with pulpal involvements<sup>8</sup>. The subject of prevalence of dental trauma had been previously studied in Iraq, mainly in the central region of Iraq, with the Arabic ethnic population. Baghdadi et al<sup>10</sup> reported a prevalence of 7.7% for 6-12 years of age among primary school children in Baghdad city. A cross sectional survey was

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carried out through clinical examination of anterior teeth among 4015, 6 to 13 years old children enrolled in 20 public primary schools in Sulaimani city, northern Iraq. The prevalence of dental trauma was found to be 6.1%<sup>11</sup>. No studies are available in Erbil city to outline the prevalence of traumatized anterior permanent teeth among 7-12 years old children.

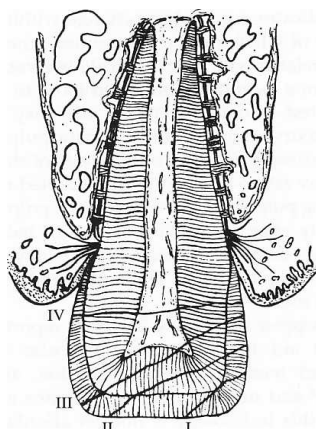
### Methods

A retrospective clinical study was performed on children patients with age range of 7-12 years old, who visited the College of Dentistry/ Hawler Medical University, Erbil, Iraq, for the period from 2007 to 2009. All children with dental crown fracture were included in the study. The traumatic dental injury was classified according to modified Ellis and Davey<sup>12</sup> of crown fracture which include:

Class I—Simple fracture of the crown involving little or no dentin,

Class II—Extensive fracture of the crown involving considerable amount of dentin but not the dental pulp, Class III—Extensive fracture of the crown with an exposure of the dental pulp and Class IV—Loss of the entire crown (Figure 1).

Information on age, gender, type of the tooth, number and type of traumatic dental injury was collected from the dental records. Descriptive statistic used to analyze the results of the study.



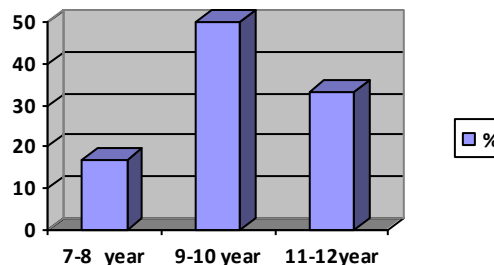
**Figure1:** Modified Ellis and Davey<sup>12</sup> classification of crown fracture (longitudinal section).

### Results

From 1868 dental records, traumatic dental injuries to the permanent anterior teeth were diagnosed in only 84 (4.5%). Fifty one boys (60.7%) and thirty three girls (39.3%) were involved. The male/female ratio was 1.55 : 1. The highest frequency of teeth injuries occurred among 9-10 years old children (Figure 2). A single tooth injury (maxillary centrals) which was found in 84.5% of all cases and it was found in 59.2% at boys and 40.8% of girls. Two teeth injury (maxillary centrals and laterals) was found in 15.5% of the cases distributed as 69.2% for boys and 30.8% for girls (Table 1). The permanent teeth most frequently affected by traumatic dental injuries were the maxillary central incisors (98.8%), among them 45.8% of the cases involving the right central incisor and 54.2% of the cases involving the left central incisor (Table 2). The most frequent injuries were class II crown fracture (47.4%), followed by class III (40.2%), class IV (11.4%) and class I (1%) respectively (Table 3).

**Table 1:** Number of injured permanent teeth per patient.

No. of injured teeth	Boys	Girls	Total
1	42(59.2%)	29(40.8%)	71(84.5%)
2	9(69.2%)	4(30.8%)	13(15.5%)
<b>Total</b>	<b>51(60.7%)</b>	<b>33(39.3%)</b>	<b>84(100%)</b>



**Figure2:** distribution of traumatic dental injuries in relation to age

**Table 2:** Number of injured permanent teeth according to the right and left maxillary central incisor

Maxillary central incisor	No. of teeth	%
Right	38	45.8
Left	45	54.2

**Table 3:** Number of injured permanent teeth according to the type of crown fracture

Type of crown fracture	No. of teeth	%
Class I	1	1.0
Class II	46	47.4
Class III	39	40.2
Class IV	11	11.4

## Discussion

Dental trauma in primary teeth may result in pain and loss of function. It can also adversely affect the development of the permanent teeth and the developing occlusion<sup>13</sup>. The prevalence of dental trauma in this study was relatively low (4.5%). This may possibly due to the system of referral of injured children to the emergency hospitals. This result was similar to that found by Noori and Al-Obaidi<sup>11</sup> in Sulaimani City, Iraq. Boys are more prone to traumatic dental injuries.<sup>11,12,13,14-21</sup> This is may be due to the fact that males tend to participate in more strenuous activities with higher trauma risk, such as contact sports and more aggressive types of playing<sup>11</sup>. The highest occurrence of dental injury was found in the age interval of 9-10 years of age.<sup>15,16,19,22,23</sup> This could be attributed to the fact that children are usually more active in this period of life and often lack motoric coordination because of their developmental stage,<sup>17</sup> for this reason they cannot precisely evaluate velocity and danger. As they grow up, proneness to traumatic dental injuries is significantly reduced because of the decrease in predisposing factors indicated above.<sup>24</sup> According to the results of this study, the incidence of two injured

teeth is more frequent in boys than in girls, which is similar to those of some recent studies.<sup>11,15,18,23-27</sup> A possible cause of boys higher proneness to traumatic dental injuries could be their involvement in more aggressive sports, as well as their more violent behavior.<sup>14-16,17,19,22,23</sup> In general, high percentage of traumatic dental injuries to the maxillary teeth can be explained by the prominence of these teeth. The maxillary central incisors are sometimes in a protrusive position and often inadequately covered by the upper lips, which could possibly amortize the strike.<sup>28,29</sup> Unlike the lower teeth and the canines, the latter, considered as the strongest teeth in the jaw, are usually better protected by the lips and not so prone to injury.<sup>28-31</sup> Moreover, the upper jaw is rigid and the lower jaw is movable, which additionally contributes to the predisposition of certain teeth to injury.

## Cnclusion

The prevalence of dental trauma is relatively low. More attention should be paid to preventive measures, which includes wearing mouth guards, especially in the early stages of psychophysical growth of male population.

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