

Oral Factors Predisposing To Injury Of Permanent Incisors In School Children In Al-Ramadi City

Lamia I.S AL-dulayme

B.D.S :M.Sc pedodontic Lecturer, department of POP, college of dentistry, AL-Anbar University,

Abstract

Dental trauma is a serious public problem causing psychology, aesthetic, social and therapeutic problems and its irreversible pathology that after occurrence is characterized by life-long debilitating effects.

This study aimed to investigate the oral risk factors for injury to maxillary permanent incisors among Al-Ramadi school children aged 6-13 years, the result clarified frequency of traumatically injured teeth increase in class II division I, lip incompetent with increase over jet and overbite value more than 4mm but only the over jet more than 4mm and lip incompetent reach the level of significant ($p < 0.01$)

Thus, special preventive program and correction of predisposing risk factors should be carried out in early mixed dentation

Key words: Traumatic teeth, occlusion, overbite, over jet, lip position

INTRODUCTION

One of the greatest assets a person can have is a "smile" that shows beautiful, natural teeth. An untreated and unsightly fracture of an anterior tooth can affect the behavior of a child, his progress in school, and can have more impact on their daily living.⁽¹⁾ Traumatic dental injury has become the most serious dental public health problem in children since a remarkable decline in the prevalence and severity of dental caries in many countries.⁽²⁾

Nearly all studies that conducted around the world concerning traumatic dental injury showing that boys more affected by incisor trauma than girls.⁽³⁾

While other studies demonstrated that there were non-significant difference in prevalence of traumatic injuries with gender.⁽⁴⁾

On other hand, some studies found that there was significant difference in the prevalence of traumatic dental injury with class II division 1 malocclusion⁽⁵⁾, and also found higher prevalence traumatic dental injury in relation to increase over jet more than 4 mm⁽⁶⁾ while other found no relation.⁽³⁾

Further more the prevalence of traumatic dental injury was highly greater in subjects with over bite more than 4mm compared with normal.⁽⁷⁾

Lip position has been previously studied by many authors some authors showed that children with inadequate lip coverage were at greater risk to trauma,^(5, 8) while other found no relation⁽³⁾

In Al-Anbar, there is only one published literature is available on the prevalence of traumatic injuries to anterior teeth in mixed dentition period⁽⁹⁾. Hence, this study was carried to determine the predisposing risk factors of fractured anterior teeth among 6-13 years school children of Al-Ramadi city.

MATERIAL AND METHOD

Clinical oral examination were carried out in a chair with a tall back and examination were conducted under an artificial light, standardization was made

according to (WHO, 1997)⁽¹⁰⁾

A study involving 1830 students between the age (6-13) years old were participated in the study, after clinical examination, 310 student had sustained traumatic crown fracture for their maxillary permanent incisor, 180 (58.07) were boy, 130 (41.93) were girls. All students with chronic disease or permanent body deforming or non traumatic dental injuries or student with restored anterior teeth whom the causes of restoration was not due to traumatic fracture of the tooth were excluded from the sample.

Visual and tactile examination were performed, root fracture were not recorded, as routine dental per apical radiographs were not taken due to technical difficulties

Type of occlusion (incisal relation ship) was recorded according to British standard classification⁽¹¹⁾

A tooth to lip relation ship assumed by Daskalogiannakis 2000 was followed in the current study⁽¹²⁾, while the maxillary anterior over jet was assessed practically definition by mcgivery and gastleberryl 994, Mckee, 1997^(11, 12)

Recording of the over bite value was according to the definition by Smith and Bailit 1979⁽¹³⁾ and Drakers direct method of measuring overbite value had been used in the current study⁽¹⁴⁾

Data analysis included descriptive statistics (frequency distribution, statistical tables)

Statistical significance for the association between the occurrence of crown fracture and gender, age and other variables was carried out by using t-Test for paired observation, Z-test between two proportions.

For the previous tests -p- level more than 0.05 was considered as not significant, p-values equal to or less than 0.05 and less than 0.01 were regarded as significant,

RESULT

The level of traumatic injuries in boys (58.07%) was significantly higher than girls (41.93%) ($P=0.02$). The difference in the prevalence of coronal fracture between boys (7.8%) and girls (7.5%)

Table (1) The distribution of children with traumatized teeth by gender

Gender	Total		Prevalence (%)
	NO	%	
Boys	180	58.07	7.8 *
Girls	130	41.93	7.5
Total sample	310		15.3 Z=21.5*

* Significant $p < 0.05$

The distribution of children with traumatized teeth in relation to the type incisal relationship showed that class II division I malocclusion (protrusion) was more prominent (84.4%) in boy than girl (61.5). For

total sample, children with class 11 division 1 malocclusion were more common than children with other class incisal relationship. As show in table (2)

Table (2) The Distribution of children with traumatized teeth in relation to type of occlusion (incisal relationship)

Gender	Class 1 occlusion		Class II Division 1		Class II Division 2		Class III mal occlusion		Total	Sig
	NO	%	NO	%	NO	%	NO	%		
Boys	18	10	152	84.4	7	3.88	3	0.1.66	180	NS
Girls	40	30.76	80	61.5	10	7.69	0	0	130	
Total sample	50	18.7	232	74.8	17	5.48	3	0.96	310	

Table (3), the result referred that short upper lip (in adequate lip coverage) occupied higher percentage among boys (55.55%) than boys of adequate lip coverage (44.44%).statistically reach the level of

Significant .For the total sample, in adequate upper lip coverage was the commonest among the subjects (55.17%) than adequate upper lip coverage but statistically not reach the level of significant.

Table (3) The Distribution of children according to lip position

Gender	Inadequate lip position		Adequate lip position		Total	Sig.
	NO	%	NO	%		
Boys	100	55.55	80	44.44	180	*
Girls	17	54.61	59	45.38	130	
Total sample	171	55.17	139	44.83	310	

* Significant $p < 0.05$

For the total sample in table (4), children with an over jet value more than 4mm, recorded high percentage of traumatized teeth increased to (52.9%) while the least prevalent group was recorded among those with zero mm over jet (edge to edge) had which reg-

istered only (5.80%) .Statistically a significant difference was recorded between both genders

The result revealed that an overbite value more than 4mm registered higher percentage (48.7%) com-

pared with zero mm overbite (4.19%), statically no difference was found between boys and girls

Table (4) The Distribution of children with traumatized teeth according to over jet and overbite

Gender	over jet								Total	sig.
	Zero mm NO	%	<2mm NO	%	2-4mm NO	%	>4mm NO	%		
Boys	13	7.22	21	11.66	44	24.4	102	56.4	180	*
Girls	5	3.84	16	12.3	47	36.15	62	97.69	130	
Total sample	18	5.80	37	11.93	91	29.35	164	52.9	310	

Overbite										
Boys	5	2.77	45	25	40	19.130	100	55.55	180	NS
Girls	8	6.15	23	17.69	48	36.92	51	39.23	130	
Total sample	13	4.19	68	21.93	88	28.38	151	48.7	310	

* Significant $p < 0.01$, NS Non significant $P > 0.05$

DISCUSSION

Traumatic dental injury is not a result of disease but a consequence of several factors that will accumulate throughout life if not properly treated.⁽¹⁵⁾

finding that boys (58.07%) experienced dental trauma more frequently than the girls (41.93%), agrees with other similar studies from across the world.^(16,3) The relatively low prevalence of trauma in girls can be explained by the fact that girls are generally more mature in their behavior than boys, who tend to be energetic and inclined toward vigorous outdoor activities.⁽¹⁶⁾ Vanderas and papagianuolis pointed out higher level of epinephrine, dopamine and emotional stress in boys⁽¹⁷⁾

The prevalence of traumatized teeth was found to be high percentage with class II mal-occlusion particular division I compared to class I occlusion, this was in line with AL-Kassab and Kania *et al*^(5,18).

Result may be explained by the fact that in case of normal occlusion the energy of trauma is decreased by the larger contact area, the incisal contact of upper and lower teeth and the protecting effect of the lip closure, while in case with class II mal occlusion, the lack of incisal contact, or the location of this contact in the cervical part of the upper incisor or the uncompleted lip closure all these increase the risk of being traumatized in children with class II mal occlusion^(5, 18).

The significant difference between the adequate and inadequate lip position (55.17%, 44.83%) respec-

tively because inadequate lip coverage may provide less protection to mal occlusion incisor and thus easily contribute to the increased risk of coronal fracture and mostly when there is incompetent lips there is proclaine anterior teeth⁸, and this was in line with AL-Kassab and Celehk *et al*.^(5,19)

An over jet more than 4mm was more obvious crown fracture in children than other rang values of the total sample, this finding corroborated other studies that found children with increased over jet were more likely to have dental injuries than other children⁽⁶⁾, but disagreed with Marcenes *et al*⁽²⁰⁾. and this finding can explained by the prominent position of incisor teeth and lack of contact between these teeth with corresponding of lower jaw and presence of short upper lip, all these can robust the over jet to be principle modifiable risk factor for maxillary incisor trauma.⁽²¹⁾

Prominent association was found between increased over bite more than 4mm and coronal fracture. This was in accordance with previous finding like Shuluman and Peterson⁽⁷⁾. Overtly as the deep bite may usually be association with class II malocclusion⁽²²⁾, so the high prevalence of coronal fractures may be confined to this type of malocclusion rather than increased overbite.

The present study observe the children in mixed dentition period as the population at risk. Hence, prevention through health promotion and correction of predisposing risk factors should be carried out in early mixed dentition period to reduce the prevalence of

dental injury and to avoid the financial costs of treatment. An effort can be made to reduce the prevalence of traumatic injuries by taking into consideration the following measures.

- The use of intraoral and extraoral devices which protects the face and teeth from trauma.
- Elimination or reduction of predisposing factors in the form of orthodontic treatment.
- Educational programs where by the children and their parents are given information regarding the preventive and treatment aspects of this commonly occurring condition.

REFERENCES

1. Cortes MIS , Marcenes W, Sheiham A. Impact of traumatic injuries to the permanent teeth on the oral health-related quality of life in 12-14-year old children. *Community Dent Oral Epidemiol* 2002;30:193-8.
2. Petersson HG, Bratthall D. The caries decline: A review of reviews. *Eur J Oral Sci* 1996;104:436-43.
3. Shirin Al-Asmar Karlsson:Overjet and incisor position as predisposing factors for dental trauma Aretrospective study in orthodontically Treated children. 2006.Master of Medical Science in Stockholm
4. AdekoyaSofowora,ComfortA; desina ,Olufemi A.; Nasir, Waked Olabamiji Oginni,AdelekeOke; Ugboko,Vincent I : Prevalence and causes of fractured permanent incisors in 12 year-old suburban Nigerian school children : *Dental Traumatology*, 2009.Volume25, Number 3, , pp. 314-317(4): Blackwell Publishing
5. Agharred G AL-Kassab: Evaluation of primary schools students with traumatized anterior permanent incisor in relation to different variables in mosul city.Master thesis submitted to college of dentistry, 2005, University of Baghdad
6. Harry R.,and Sandy J. Orthodontic .Part I:Who needs Orthodontics.J .; 2003, 195(8) :433-438.
7. Shulman-JD .And PetersonJ. : The association between incisor trauma and occlusal characteristics in individual's 8-50years of age .*Dent. Traumatol.* 2004. 20(2):67-72
8. Cortes MI.,Marcenes W.,Sheiham A:Prevalence and correlates of traumatic injuries to the permanent teeth of school children aged 9-14 years in Belo Horizonte ,Brazil.*Endod.Dent. Traumatol.*; 2001, 17:22- 26
9. Soud L. I., Abdul Jabbar M.R ,Ahamed N.R : (Evaluation of primary schools students with traumatized anterior permanent incisor teeth in al-amadi city/iraq .*Egyptian dental journal* ,2010,vol. 56,number 2(part 111) :935-93810-World
10. Health Organization (WHO): Oral health surveys .Basic method .4th .Geneva,1997.
11. Mills J.R:Principle and practice of orthodontics, Churchil living stone Company . 1987,2nd ed .,Ch.1 ,PP18-32.
12. Daskalogiannakis J.Glossary of orthodontic terms .text book .Berlin :Quintessence Publishing CO.,Inc .2000.;pp 212-213,267.
13. Mcgivery P.,Castleberry D.:McCracken removable partial denture ,U. S.A., 1994.8 th ed.,Ch. 1 'pp 5-45.
14. MckeeJR. : Comparing condyler position repeatability for standardized versus non standardized methods of achieving centric relation .*J. of Prosthatic .Dent.* 1997. 77(3):280-287.
15. Soriano EP, Caldos Jr AF, Carvalloh MV, Amorium Filho HA. Prevalence and risk factors related to traumatic dental injuries in Brazilian school children. *Dent Traumatol* 2007;23:232-40
16. Cortes MIS , Marcenes W, Sheiham A. Impact of traumatic injuries to the permanent teeth on the oral health-related quality of life in 12-14-year old children. *Community Dent Oral Epidemiol* 2002;30:193-8. †
17. Vanderas AP.and Papagianuolis L. : Incidence of dento-facial injurie in children: a2-year longitudinal study .*End .Dent.Traumatol.* 1999;15:235- 238
18. Kania MJ.,Keeling SD.,McGorray SP., Wheeler TT.,King GJ:Risk factors associated with incisor injury in elementary school children .*Angle Orthod.* ; 1996. 66(6)423 -432
19. Celenk S., Sezging B., Ayna B.,Atakul F:Causes of dental fracture in the early permanent dentition :a retrospective study. *J.Endod.* 2002.28 (3):208-210.
20. Marcenes W., AL-essi ON., Traebbet J:Causes and prevalence of traumatic injuries to the permanent Incisors of school children aged 12 years in jaragua dosul ,Brazil .*Int.Dent.J.* ; 2000, 50:87-92
21. O Mullane D.M. some factors predisposing to injury of permanent incisors in school children. *Br dent j*: 1973; 134:328-32
22. Jarvinen S :Incisal over jet and traumatic injuries to upper permanent incisors-A retrospective study .*ActaOdontol Scand.* 1978:36(6)359-362