

## Original Article

### A Clinical Evaluation of Spectrum of Dental Injuries at Department of Dentistry, K.R. Hospital, Mysore – A 2 year Retrospective Study

S. Sandeep Tejaswi<sup>1</sup>, T.S. Subash<sup>2</sup>

<sup>1</sup>M.D.S. Oral and Maxillofacial Surgery Resident-Department of Dentistry, K.R. Hospital, Mysore -01.

<sup>2</sup>M.D.S, Conservative and Endodontics, MSc, Forensic Odontology, Head of The Department, Department of Dentistry, K.R. Hospital, Mysore -01.

#### ABSTRACT:

**Background:** Smile is infectious lets spread it”, one of the greatest assets a person can have is SMILE which shows beautiful and natural teeth. An untreated and unsightly fracture of an anterior tooth can affect behaviours of person and his or her progress in life and can have immense negative impact. There is an urgent need to collect the data on dental injuries in order to obtain a more comprehensive picture of dental trauma. **Materials and Methods:-** A 2 year retrospective study was conducted at Dept of Dentistry, K R Hospital Mysore a total of 200 cases data were collected from MLC record books from year 2015 to 2017. Age groups were selected from 5 years to 70 years and were tabulated pertaining data in relation to mode of injury, tooth involved, and an attempt in this study has been made to find out any association with adjoining anatomical structures (dentoalveolar, mandibular symphysis, parasymphysis, body , angle, maxilla and nasal bone fractures) traumatised along with dental injuries. For evaluation of Traumatic Dental Injuries “The Modified Ellis Classification and Criteria and Scoring for TDI” was used. **Results:-** Most commonly involved age group in our study is 11 to 20 years (25%), followed by 21-30 years and 31-40 years(22.4%), least being 51 plus years (13.6%), majority are being male gender. <10 years of age group constituted 12% majority being male patients, Type 3 (Enamel and Dentine fracture with pulp) was maximum of 76(37.8%) followed by Type 2(Enamel and Dentine fracture) 45(22.4%), Type 6 ( tooth loss-due to extra-articulation) constituted 33(16.4%), Type5( displacement ) 32(15.9%), Type 1(enamel fracture only) 12(6%), least being Type 4(non vital tooth with discoloration) and Type 7(fracture and restoration) 1(0.5%) in our study. **Conclusion:-** The data recorded in our study were showed in young population < 10 years and 11 to 20 years majority dental injury occurred at home and in school, due to fall and collisions showing 90%. Our results were consistent with the literature that reported the most common cause of injury was a fall and home being place. Dental injuries associated with maxillofacial injuries are Dentoalveolar 39.5%, Mandibular fractures 66.7 %, Maxilla fractures 15 %.

**Key words:-** Elli’s fracture, dentoalveolar, traumatic dental injury, enamel, dentine, pulp.

Received: 14 January, 2019

Revised: 26 February, 2019

Accepted: 27 February, 2019

**Corresponding Author:** Dr. T.S. Subash, M.D.S, Conservative and Endodontics, MSc, Forensic Odontology, Head of The Department, Department of Dentistry, K.R. Hospital, Mysore -01, Karnataka, India

**This article may be cited as:** Tejaswi SS, Subash TS. A Clinical Evaluation of Spectrum of Dental Injuries at Department of Dentistry, K.R. Hospital, Mysore – A 2 year Retrospective Study. J Adv Med Dent Scie Res 2019;7(3): 139-142.

#### INTRODUCTION:-

“Smile is infectious lets spread it”, one of the greatest assets a person can have is SMILE which shows beautiful and natural teeth. An untreated and unsightly fracture of an anterior tooth can affect behaviours of person and his or her progress in life and can have immense negative impact. Tooth loss can also occur because of trauma – RTA, Assault, Sports or Industrial trauma. The majority of dental injuries involve anterior teeth.<sup>1-4</sup> Epidemiological studies indicate that dental trauma is a significant problem in young people and that in near future the incidence of trauma will exceed that of dental caries and

periodontal disease in young population. Studies has shown that frequencies ranging from 9.4% to 41.6% in primary dentition.<sup>5-8</sup> Traumatic injuries in permanent teeth have been reported to have a prevalence of traumatic dental injuries are reported literatures in India.<sup>9-13</sup> There is an urgent need to collect the data on dental injuries in order to obtain a more comprehensive picture of dental trauma.

#### MATERIALS AND METHODS:-

A 2 year retrospective study was conducted at Dept of Dentistry, K R Hospital Mysore a total of 200 cases data

were collected from MLC record books from year 2015 to 2017. Age groups were selected from 5 years to 70 years and were tabulated pertaining data in relation to mode of injury, tooth involved, and an attempt in this study has been made to find out any association with adjoining anatomical structures (dentoalveolar, mandibular

symphysis, parasymphysis, body, angle, maxilla and nasal bone fractures) traumatised along with dental injuries. For evaluation of Traumatic Dental Injuries “TheModified Ellis Classification and Criteria and Scoring for TDI” was used<sup>14</sup>(Table no 1).

**Table no 1:-**

Code	Criteria	Description
0	No Trauma	
1	Enamel fracture	Simple fracture of crown, enamel only; involving little or no dentine
2	Enamel and dentine fracture	Extensive fracture of the crown involving considerable dentine but with no pulp
3	Enamel and dentine fracture with pulp	Extensive fracture of the crown involving considerable dentine and exposing dental pulp
4	Non- vital tooth with discoloration	Traumatized tooth that is non vital, and is discoloured, with or without loss crown structure
5	Displacement	Extrusion, intrusion or lateral displacement
6	Total tooth loss	Absence of tooth due to complete ex-articulation
7	Fracture and restoration	Restored tooth with composite or crown following fracture of crown

Data analysis included Descriptive statistical analysis, the data was analyzed using Pearson Chi square analysis . Statistical significance for association between occurrences of dental injuries and gender, age, mode of injury were determined using Pearson Chi square analysis.

**METHODS:-**

A total of 200 cases were recorded from MLC record books having documented history of dental injuries. Entries in MLC record books were noted down and Standard Classification used by all examiners were “Modified Ellis Classification”<sup>14</sup>. Injuries pertaining to age, teeth, mode of trauma and association with other anatomical structures such as Maxilla, mandible fractures ( symphysis, parasymphysis, body, angle etc.), dentoalveolar , nasal bone fractures were recorded and an attempt has been made to obtain better correlation amongst these parameters and tabulated accordingly.

**Table no 2:-**

TYPE	FREQUENCY	PERCENTAGE
T 1	12	6%
T 2	45	22.4%
T 3	76	37.8%
T 4	01	0.5%
T 5	32	15.9%
T 6	33	16.4%
T 7	01	5%
T 3 & T 6	01	0.5%
TOTAL	201	100%

**Table no 3:-**

AGE(YEARS)	GENDER		TOTAL
	MALE	FEMALE	
<10 YEARS	15(12%)	15(19.7%)	30(14.9%)
11-20 YEARS	20(16%)	19(25%)	39(19.4%)
21-30 YEARS	28(22.4%)	14(18.4%)	42(20.9%)
31-40 YEARS	28(22.4%)	2(2.6%)	30(14.9%)
41-50 YEARS	17(13.6%)	4(5.3%)	21(10.4%)
51 + YEARS	17(13.6%)	22(28.9%)	39(19.4%)

**RESULTS:**

**Age groups:-**

Most commonly involved age group in our study is 11 to 20 years (25%), followed by 21-30 years and 31-40 years (22.4%), least being 51 plus years (13.6%), majority are being male gender. <10 years of age group constituted 12% majority being male patients (Table no 3).

### Mode of injury vs age:

**Fall:**-In < 10 years of age groups 27(90%) incurred injuries due to fall, followed by 51+ years of group 25(64.1%). Assault :- was most common in age groups of 31-40 years 13(43.3%), followed in age groups of 41-50 years 5 (23.8%). Industrial trauma:- maximum seen in age groups of 31-40 years 6(20%), followed by 41-50 years 4(19%). Road traffic accidents:- constitutes 12(28.6%) in age groups of 21-30 years followed by 11(28.2%) in age groups of 11-20 years. Sports:- injury seen majority in age groups of 11-20 years 18(46.2%), followed by 14(33.3%) in age groups of 21-30 years.

**Assault:**- Majority of site involved in assault is dentoalveolar injury 15(39.5%) Fall:- common anatomical associated is lower jaw mandibular symphysis 4(36.4%), followed by nasal bone seen in conjunction of about 3(27.3%). Industrial trauma:- less significant in this study of 1% from all sites,

**Road traffic accidents:**- most common anatomical site associated with dental injuries due to RTA is mandibular parasymphysis 4(66.7%), followed by mandibular body fractures 6(54.5%), and combination of mandibular body and mandibular angle region 1(50%) followed by mandibular symphysis and maxilla fractures in equal distributions of 5,9(45%).

**Sports:**- associated anatomical site in dentoalveolar region 6(15.8%) in our study.

### Distribution of Elli's dental fracture types in our study:-

Type 3 (Enamel and Dentine fracture with pulp) was maximum of 76(37.8%) followed by Type 2(Enamel and Dentine fracture) 45(22.4%), Type 6 (tooth loss- due to extra-articulation) constituted 33(16.4%), Type 5 (displacement) 32(15.9%), Type 1(enamel fracture only) 12(6%), least being Type 4(non vital tooth with discoloration) and Type 7(fracture and restoration) 1(0.5%) in our study (Table no 2).

### Association of type of Elli's fracture and associated anatomical site:-

In Type 2 (enamel and dentine fracture) the associated anatomical structure commonly noted was dentoalveolar fracture 6(15.8%), 1(15%) was maxilla fracture. In Type 3(enamel and dentine fracture with pulp) the associated anatomical structure was dentoalveolar 15(39.5%), followed by associated with nasal bone fractures 6(54.5%). In Type 5 (displacement of tooth) was associated with mandibular body, mandibular angle and maxilla fractures of 1(50%). In Type 6 (total tooth loss or extra-articulation) majority association was seen with mandibular parasymphysis fracture of 5(83.3%).

### Tooth involved vs age groups:-

In ages of < 10 years – upper central incisors and upper lateral incisors were involved in maximum numbers of 1(100%). In age groups of 11- 20 years- Upper central

incisors were involved 2(66.7%), 21- 30 years of age lower canine and premolars were maximum involved 1(100%), 31-40 years lower molars (50%), followed by 41-50 years lower central incisors and premolars 1(50%), and in 51 years and above lower central incisors were involved of 11(35.5%).

### DISCUSSION:-

Epidemiological knowledge of Traumatic Dental Injuries adds valuable information on public health and when associated with clinical trials it provides valuable information. The retrospective epidemiological evaluation developed in this study was based on verification of MLC records of patients with Maxillofacial trauma associated with Dental Injuries data record in MLC records in Department of Dentistry, K.R.Hospital, Mysore during 2015 to 2017 a 2 year period. The population in this set was a middle class and low socio-economic levels. The Traumatic Dental Injuries classification adopted in this study was based on criteria proposed by Ellis," The Modified Ellis Classification and scoring for Traumatic Dental Injuries"<sup>14</sup>.

The most frequently identified traumatic dental injury in the study were Type 3(enamel and dentine fracture involving pulp 76 (37.8%), followed by Type 2(enamel and dentine fractures 45 (22.4%). These results coincide with previous studies<sup>10,11</sup>. This study was performed in Out patient unit with data recorded by different examiners at different times and entered in MLC record books. Male individuals suffered significantly more traumatic dental injury in permanent dentition than females in the ratio of 5 : 3. This is the common correlation in most of the epidemiological studies<sup>7</sup>. Men are main victims of such injury because of increased physical activity, sports, assaults, usage of industrial equipments, other studies have demonstrated the same incidence<sup>2,14</sup>.

Dental injuries have been observed in children of age groups of < 10 years<sup>12</sup>, in this study it was verified elevated increase in dental injury among age of 11 to 20 years (25%), which is in accordance with other investigations.<sup>10,15</sup> However we need to be vigilant in comparing these data among the studies of different methodology. Dental injuries were most common in Maxillary Central Incisor (100%) as reported in other citations.<sup>5,10,15</sup> Main causes may include increased prominence of tooth, proclination, decreased soft tissue coverage may be explained<sup>16</sup>. Next most teeth is Maxillary Lateral Incisor (26%) in concomitant with Central Incisor or with Dentoalveolar component 6(15.8%) as verified with other studies<sup>17</sup>.

In this study isolated individual tooth injury were less common, although majority of the cases were associated with adjacent teeth along with bony component or with other facial fractures as depicted in this study, some presented with multiple tooth associated with maxilla or mandible fractures associated with injuries to posterior teeth also. More severe traumatic dental injuries were associated with RTA, Assaults, Industrial Trauma. The etiological factor varied according to the age groups in

this study as majority resulted in fall in age groups of <10 years 27(90%), 51+ years 25(64.1%) . As the age increases the RTA, Sports, Assault and other activities increases which predisposes to more injuries. In adult patients most common etiology was Assault in age groups of 31 to 40 years 13 ( 43.3%), followed by RTA in age groups of 21 to 30years 12 (28.6%), Sports 11 to 20 years 18 ( 46.2 %) followed by age groups of 21-30 years 14(33.3%), and industrial trauma 31-40 years 6(20%) and 41 to 50 years 4(19%) , gender predominance M:F 5 :3 ( Male 62.5%, Female 38%). As shown in results Type 3 ( enamel and dentine involving pulp) are majority in our study 15(39.5%) was associated with nasal bone fractures 6(54.5%) probably this might explain for impact more from anterior direction and involving nasal bone concomitantly, In Type 5 ( displacement of tooth) was associated with mandibular body , mandibular angle and maxilla fractures of 1(50%). In Type 6 (total tooth loss or extra-articulation) majority association was seen with mandibular parasymphysis fracture of 5(83.3%). Majority of them have enamel, dentine and pulp fractures this finding corresponds with previous research studies carried out on different population<sup>5,6</sup>. Other reported subluxation and avulsions as the most frequent types <sup>7,8</sup>. In our study traumatic dental injuries occur more in maxilla than in mandible due to prominence of maxillary anterior teeth, also the upper jaw is fixed to the skull which makes it more rigid, while the lower jaw being flexible part tend to reduce the impact forces directed on the lower anterior teeth by movements<sup>9</sup>.

#### CONCLUSION:-

The data recorded in our study were showed in young population < 10 years and 11 to 20 years majority dental injury occurred at home and in school, due to fall and collisions showing 90%. Our results were consistent with the literature that reported the most common cause of injury was a fall and home being place. Dental injuries associated with maxillofacial injuries are Dentoalveolar 39.5 %,Mandibular fractures 66.7 %, Maxilla fractures 15 %. The present study is a retrospective collection of data on traumatic dental injuries. One short coming is the accuracy of entries made in MLC record books by different examiners, although this is a limitation in this study a further cross sectional study are important to identify risk factors to be incorporated in further longitudinal studies.

#### REFERENCES:-

- Marcenes W, A L Beiruti N, Tayfour D, Issa S, Epidemiology of traumatic injuries to permanent incisors of 9 to 12 year old school children in Damascus, Syria. *Dental Traumatology* 1999;15:117-123.
- Wright G,Bell A, Mc Glashan G, Vicent C, Welbury RR, Dentoalveolar trauma in Glasgow: an audit of mechanism and injury . *Dent Traumatol* 2007;23:226-231.
- World Health Organization . *World Oral Health Report 2003*, published 2003, Accessed 15 February 2018.
- K.P.Bharath, "The reverberations of traumatised primary dentition : a practitioners perspective" *Journal of Contemporary Dental Practice*, Vol 12, pp 511-515,2011.
- L.A.Antunes, I F Gomes, M H Almeida, E A Silva, J D Calassans- Maia and L S Antunes,"Increased overjet is a risk factor for dental trauma in pre school children", *Indian Journal of Dental Research* , Vol 26, no 4, pp 356-360,2015.
- V P Chalissery, N Marwal, M Jafer, E P Chaliserry, T Bhatt and S Anil, " Prevalance of anterior dental trauma and its associated factors among children aged 3 to 5 years in Jaipur city, India – a cross sectional study." *Journal of International Society of Preventive and Community Dentistry*, Vol 6, no 7, pp 35-40,2016.
- J A Diaz, L Bustos, A C Brandt and B E Fernandez," Dental injuries among children and adolescents aged 1 to 15 years attending to public hospital in Temuco, Chile," *Dental Traumatology*, Vol 26, no 3,pp 254-261,2010.
- L R da Silva, Assuncao, A Ferelle, M L Iwakura, L S do Nascimento and R F Cunha," Luxation injuries in primary teeth: a retrospective study in children assisted at an emergency service",*Brazilian Oral Research* , Vol 25, no 2,pp 150-156,2011.
- N S Baghdady, L J Ghose and H Enke," Traumatic anterior teeth in Iraqi and Sudanese children- a comparative study," *Journal of Dental Research*, Vol 60, no 3, pp 677-680,1981.
- J Vejdani, S fathollah and E Leyli," Prevalence of traumatic injuries to anterior primary teeth in pre school children in Rasht, Guilan, 2012," *Journal of Dental Maxillofacial Radiology, Pathology and Surgery* Vol 2, no 4,pp23-28,2014.
- Kumar A, Bansal V,Veerasha K L, Sigi G M. Prevalence of traumatic dental injuries among 12 to 15 year old school children in Ambala District, Haryana , India. *Oral Health Prev Dent* 2011;9:301 to 305.
- Gupta S , Kumar Jindal S, Bansal M, Singhla A. Prevalence of traumatic dental injuries and role of incisal overjet and inadequate lip coverage as risk factor among 4 to 15 years old government school children in Baddi- Barotiwala Area, Himachal Pradesh, India. *Med Oral Patol Oral Cer Bucal* 2011;16:e960-e965.
- Patel MC, Sujan SG. The prevalence of traumatic dental injuries to permanent anterior teeth and its relation with predisposing risk factors among 8 to 13 year school children of Vadodra city: an epidemiological study. *J Indian Soc Pedod. Prev. Dent* 2012;30:151-157.
- Ellis RG,Davy KW. The classification and treatment of injuries to the teeth of children. 5 th edition Chicago Yearbook Medical Publishers;1970.
- MarcenesW, Murray S. Social deprivation and traumatic dental injuries among 14 year old school children. *Dent. Traumatol* 2004;20:246 -250.
- Glendor U. Aetiology and risk factors related to traumatic dental injuries – a review of literature *Dent Traumatol* 2009;25:19-31.
- Andreasen JO, Andreasen FM. *Textbook and color atlas of traumatic injuries to the teeth*. Copenhagen: Munksgaard; 1994.