

Maxillofacial trauma among children below 15 years in Sulaimani city/ Iraq

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Abstract

The management of maxillofacial trauma in children differs from that of adults due to concern for growth and dentition development. Although the incidence and distribution of the pediatric facial trauma is common, there were few reports about this type of trauma. The aim of this study was to analyze the patterns of facial injuries in a sample of Sulaimani City children. The study included the records of (168) child patients sustained maxillofacial injuries. The data analyzed according to sex, age group, type of injury, site of injury, cause of injury and associated injuries. The results showed the male patients (57.7%) affected more than females while the most age group affected by trauma was (1-5) years. Soft tissues involved in (77.9 %) of the injured children and the chin was the most affected area (26.7%). Fall on the ground was the most cause of trauma (26.19%) followed by fall from height (25%). The dentoalveolar injuries were the most concomitant trauma (14.88%). This study provides a clinical data about the pediatric maxillofacial trauma for medical education and health care programs.

Keywords: Pediatric trauma, maxillofacial injuries, soft tissues injuries, pediatric maxillofacial trauma

Introduction

The human face constitutes the first contact point in several human interactions, thus injuries and/or mutilation of the facial structures may have a disastrous influence on the affected person ⁽¹⁾.

The complex and specialized anatomical regions of the face have significant influence on facial appearance and merit unique consideration. The requirement for many secondary soft tissue procedures, which can prove considerably more difficult, can be obviated by good primary surgery. Special considerations are given to injuries of the scalp, forehead and brow, eyelid, nose, lips and ear as well as the important deeper structures of the facial nerve, lacrimal gland and the parotid duct ⁽²⁾.

Children are distinctive individuals and in relation to injury, they demonstrate different pattern of clinical features depending on the stage of their bone maturation. It is estimated that nearly 22 million children were injured annually worldwide and 12% occurred as a result of trauma ⁽³⁾.

All over the world, maxillofacial injuries in children constitute a significant clinical entity both in incidence and consequence ⁽⁴⁾. It is among the most devastating of traumatic injuries and may have long-term consequences. This relative severity is due

not only to the technical difficulty of repair but also due to the subsequent emotional and functional consequences associated with long-term disfigurement to patients, as well as the socioeconomic impact of such injuries on the health care system⁽⁵⁾.

The pediatric patient may be categorized according to various stages of growth and development. The term pediatric will refer to patients 19 years of age or younger and children from birth to 13 years of age⁽⁶⁾.

Published data from different studies on the etiology of pediatric patients tend to vary from one country to another, perhaps because of the differences in social, cultural and environmental factors⁽⁷⁾. In order to analyze maxillofacial trauma in children this study was done.

Patients and methods

This study was conducted on children sustained maxillofacial trauma and they were admitted to Sulaimany Emergency hospital in the period from April to September 2009.

All the injured patients were below 15 years of age and they were classified into six groups using a modification of Lackmann and Laskin Classification, which they are (0-2, 3-5, 6-8, 9-11, 12-14, 15 years)^(8,9).

Clinical and radiological examinations were done for all the children to determine the maxillofacial trauma. The patients' data were collected in a specially designed study form which includes age, sex, and site of injury, type of injury and cause of injury. Other associated traumas were also considered in this study.

Statistical analysis: the data were analyzed using Microsoft office Excel 2007.

Results

In this study there were (168) child complaining from maxillofacial traumas. The male patients were (97) 57.7% and the females were (71) 42.2%. The male: female ratio was 1.4:1. The most common age group affected by trauma was 3-5 years (56 patients, 33.33%) (Table 1). The results showed that the most common cause of injury was fall on the ground (44 patients) 26.19% followed by fall from height (42 patients) 25% (Table 2). Soft tissues injuries were detected in 77.9% of the patients while combined hard tissues and soft tissues trauma compose 14.82%. (Table 3). The chin was the mostly affected area (26.7%) followed by the fore head area injuries (16.6%) (Table 4). The mandible was the mostly affected bone in pediatric patients (16.07) (Table 5). Table (6) showed that pure maxillofacial trauma represented 73.8% and the dentoalveolar trauma was the most associated injuries (25 patients) 14.88%.

Table (1): The sex and age groups of the injured patients (n=168)

Age groups (yrs.)	Male		Female		Total	
	(No.)	%	No.	%	No.	%
<2	24	14.2	12	7.14	36	21.42
3-5	32	19.04	24	14.2	56	33.33
6-8	22	13.09	18	10.71	40	23.8
9-11	9	5.35	14	8.33	23	13.69
12-14	8	4.76	2	1.19	10	5.95
15	2	1.19	1	0.59	3	1.78
Total	97	57.7	71	42.2	168	100

Table (2): Causes of pediatric maxillofacial injuries(n=168)

Causes	NO.	%
Fall on the ground	44	26.19
Fall form height	42	25
Road traffic accident	38	22.61
Sport injury	29	17.26
Assault	10	5.95
Bite injury	5	2.97
Total	168	100

Table (3): Types of the facial trauma

Soft tissues trauma		Hard &soft tissues trauma		Total	
NO.	%	NO.	%	NO.	%
107	63.69	24	14.28	131	77.9
Facial bone fractures		Hard &soft tissues trauma		Total	
NO.	%	NO.	%	NO.	%
37	22.02	24	14.28	61	36.3

Table (4): Distribution of soft tissues trauma according to the facial area

Site	No. (patient)	*%
Chin	45	26.7
Forehead	27	16
Lower lip	21	12.5
Eye brow	12	7.14
Nose	11	6.54
Upper lip	10	5.95
Cheek	5	2.97
Total	131	77.9

* From the total sample (168) patient

Table(5)Distribution of facial skeleton trauma

Site	No.(patient)	*%
Mandible	27	16.07
Naso ethmoid	14	8.33
Zygoma & Orbit	11	6.54
Maxilla	9	5.35
Total	61	36.3

* From the total sample (168) patient

Table 6.Maxillofacial and associated injuries in traumatized children (n=168)

Site of Injury	Patients (No.)	%
Pure Maxillofacial	124	73.8
+ Dentoalveolar injuries	25	14.88
+ Head injuries	19	11.3
Total	168	100

+ Maxillofacial trauma associated with other

Discussion

Maxillofacial trauma in childhood is different from those for the adult patient. Compared with injuries in other parts of body, the healing process for the maxillofacial region is much quicker and encompasses fewer complications in children than in older patients. The treatment protocols for traumatized child are in principle similar to those for the adult, but both soft tissue and bone healing requires less time in children. Thus the best results are attained if treatment is started as soon as possible ⁽¹⁰⁾. Understanding and identifying the age-specific anatomic sites at risk and age specific mechanisms of injury is an important first step toward prevention of traumatic injuries ⁽¹¹⁾. In children, the incidence and etiology are also affected by age-related activities. Facial fractures in the pediatric population are reported to be less than 15% of all facial fractures. Pediatric trauma are rare below the age of 5 years and the incidence increasing as children begin school ^(12,13).

In this study the peak incidence was observed in age group below 5 years with male predominance. This is going with majority of studies conducted on maxillofacial trauma in children ^(3,4,7,14). The reason is that boys are generally more boisterous than girl and spent more time outdoors

In present study the most common cause of pediatric maxillofacial trauma is fall on ground followed by fall from height as a second etiological factor. The child learns to walk and run so the incidence of falls increases because the development of co-ordination and mobility is immature ^(15,16). When young children fall they are less able to protect the face, and are likely to sustain soft tissue injuries to the lips, tongue and face.

Facial fractures in children are reported to occur less frequently than in adults and they are more often minimally displaced ^(13,17). Some authors had been reported that mandibular fracture accounted for most facial bone fractures encountered in children ^(18,19). The same result was also shown in this study.

This could be explained by the thicker layer of adipose tissue covers the more elastic bones, and the suture lines are flexible which decrease the risk of facial bone fractures. The retruded position of the face relative to the ‘protecting’ skull is an important reason for the lower incidence of mid face and higher incidence of cranial injuries and mandibular fractures in young children (less than 5 years of age). With increasing age and facial growth, in a downward and forward direction, the mid face and the mandible become prominent and the incidence of facial fractures increases, whereas cranial injuries decrease ⁽²⁰⁾.

The data of the study suggests that there has been a shift in the pattern of injuries with age. Younger children are more likely to sustain minor injuries, such as to the soft tissue and dentoalveolar region, whereas older children tend to sustain more serious injuries,

such as fractures of the facial bones. One explanation may be the differing in the mechanisms of injury and resultant intensity of the force. Young children sustain injuries after falls or accidents at play, but as children grow older they play more contact sports and in their teen years tend to become more exposed to interpersonal violence

The two most prone areas of the face for soft tissue injuries are chin and forehead which made the greater portions of the injured area then the third area was upper lip. Thus the careful management of these area is needed which will affect the esthetic of the patient in the future.

Pediatric facial injuries are common due to children's high level of physical activity, decreased supervision and tendency toward risk-taking behavior.

Although the principles of treatment follow as the adult's, a few special considerations have to be taken into account in order to improve quality of life of the child in both short and long term. This study provides a clinical data about the pediatric maxillofacial trauma for medical education and health care programs.

Educating and giving information to the parents through the Medias and publishing instructions for primary schools is very effective in reducing the trauma occurrence among school age group. Increasing the public education and information for the automotive safety rules will decreases the incidence of this type of trauma.

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