

FACIAL FRACTURES IN CHILDREN — A STUDY

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ABSTRACT

The objective of the study was to determine the pattern of maxillofacial bone fractures due to trauma in children reporting to the Oral & Maxillofacial Surgery Unit of Khyber College of Dentistry, Peshawar. It was conducted from 2nd April 2007 to 1st October 2007.

A self-administered structured Proforma having history and clinical examination related information in addition to some conceptual statements pertaining to maxillofacial trauma was used to collect the data, which were collected from 100 patients. The male to female ratio was 2.5:1 and the highest incidence occurred in the age group of 5-8 years. The mandible was predominantly involved. 86% fractures were at parasymphysis area. For diagnosis Orthopantomogram (OPG) was the commonest radiograph used.

Key words: Pattern, Fracture, Maxillofacial, Children

INTRODUCTION

The history of facial fractures is as old as the history of mankind. Facial trauma and its sequelae have been described since ancient times.

Maxillofacial fractures occur when the facial bones are subjected to forces that exceed their impact tolerance.¹

The type of fracture sustained depend on several factors including the degree, direction and point of application of the force, the resistance to the force offered by the facial bones and the cross-sectional area of the object struck. Site of fracture is the most useful classification for practical purposes based on the anatomical location of the injury.^{2,3}

METHODOLOGY

It is a descriptive (case series) study. The record of the patients who reported to Oral & Maxillofacial Surgery Unit of Khyber College of Dentistry, Peshawar was examined. This is a tertiary care unit for the management of oral & dental problems in the region.

A total of one hundred patients with maxillofacial trauma or fracture were included in the study.

Patients above 16 years of age and patients with maxillofacial trauma but no clinical or radio-

graphic fracture of facial bones were excluded from the study.

Before collecting information, a written informed consent was taken from parents or guardian. A thorough history taking and clinical examination chart was completed for each patient. Clinical examination was done under electric halogen light in dental chair and unit with examination instruments. Finally the fracture was confirmed on clinical and radiological examination. The standard radiographs were Periapical, Orthopantomogram, Postero Anterior view of face, Para Nasal Sinuses (Waters) view, Sub Mento Vertex (Jug Handle) view, True Lateral & Lateral Oblique view of face. The selection of radiographs was according to the case.

The data collected were analyzed by statistical package for social sciences (spss) version 10. Following statistical tools were applied for variables in the study;

Frequencies and percentages were computed for pattern of maxillofacial trauma in child patients. For confounding variables like Age, Mean, Gender, Ratio and percentage were computed in the form of tables and charts.

RESULTS

Over 6 months of study 100 maxillofacial fractures were recorded. The highest incidence was in male 72

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(72%) and female 28 (28%), with the male to female ratio of 72 : 28 (2.5 : 1).

Most fractures were seen in the age group of 5-8 years (36%), followed by 9-12 years (32%), 13-16 years (18%) and the least number of fractures were seen in the age group of 0-4 years (14%). Minimum age was recorded as 2 years and maximum 16 years. Age range of patients in the survey was 2-16 years.

Out of one hundred children patients having maxillofacial trauma, mandible was the most common bone found to be fractured i.e. in 86 patients. 19 patients presented with maxillary fractures while zygomatic bone was fractured in 4 patients Table 1.

The site distribution of mandibular fractures is shown in Table 2. In this study the mandibular fracture were most commonly seen in the parasymphysis region followed by condyle, body, symphysis, dentoalveolar and angle. Coronoid and ramus was not fractured in any case. Table 2.

Out of 19 maxillary fractures dentoalveolar fracture was seen in 17 patients while 2 patients presented with Le-Fort II fracture. Figure 1.

Zygomatic fracture was found in combination with other bones fracture in 3 patients Table 1. For diagnosis of maxillofacial bone fractures in children OPG was the most commonly used radiograph. Table 3.

TABLE 1: SITE DISTRIBUTION OF BONE FRACTURED

Bone Fractured	Frequency	Percent	Valid Percent	Cumulative Percent
Mandible	79	79.0	79.0	79.0
Maxilla	12	12.0	12.0	91.0
Zygomatic Complex	1	1.0	1.0	92.0
Mandible+Maxilla	5	5.0	5.0	97.0
Maxilla+Zygo	1	1.0	1.0	98.0
Mand+Maxilla+Zygomatic	1	1.0	1.0	99.0
Mand+Zygomatic	1	1.0	1.0	100.0
Total	100	100.0	100.0	

TABLE 2: SITE DISTRIBUTION OF MANDIBULAR FRACTURE

Common sites of Mandibular #	Frequency	Percent	Valid Percent	Cumulative Percent
Dentoalveolar	8	9.3	9.3	9.3
Condyle	5	5.8	5.8	15.1
Angle	3	3.5	3.5	18.6
Body	9	10.5	10.5	29.1
Symphysis	6	7.0	7.0	36.0
Parasymphysis	28	32.6	32.6	68.6
Angle+Parasymphysis	5	5.8	5.8	74.4
Condyle+Symphysis	2	2.3	2.3	76.7
Bilateral symphysis	1	1.2	1.2	77.9
Body+condyle	3	3.5	3.5	81.4
Condyle+Parasymphysis	9	10.5	10.5	91.9
Bilateral Condyle	2	2.3	2.3	94.2
Body+symphysis	1	1.2	1.2	95.3
Body+Parasymphysis	1	1.2	1.2	96.5
Dentoalveolar+Parasymphysis	1	1.2	1.2	97.7
Dentoalveolar+Condyle	1	1.2	1.2	98.8
Bilateral Angle	1	1.2	1.2	100.0
Total	86	100.0	100.0	

TABLE 3: RADIOGRAPHS TAKEN FOR MAXILLOFACIAL TRAUMA IN CHILDREN

Radiographs	Frequency	Percent	Valid Percent	Cumulative Percent
Periapical	5	5.0	5.0	5.0
Orthopantomogram	31	31.0	31.0	36.0
PA view	1	1.0	1.0	37.0
PNS view	1	1.0	1.0	38.0
PAface+OPG	40	40.0	40.0	78.0
OPG+PNS	2	2.0	2.0	80.0
PAface+PNS	1	1.0	1.0	81.0
Periapical+OPG	9	9.0	9.0	90.0
OPG+PA+Lat+Lat ob FACE	6	6.0	6.0	96.0
OPG+PA+PNS	4	4.0	4.0	100.0
Total	100	100.0	100.0	

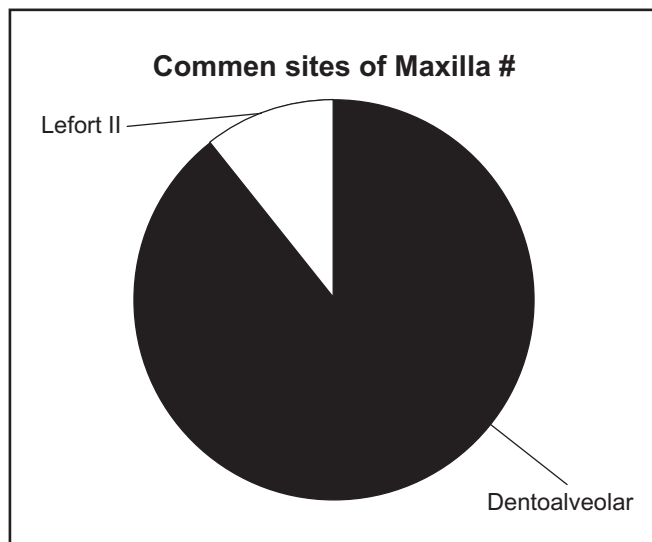


Fig 1: Site distribution of Maxillary fracture

DISCUSSION

There has been interest worldwide to document pattern of facial bone trauma.^{4,5}

Maxillofacial injuries are very significant, in long term particularly from psychological point of view. Distortion of face, speech and mastication difficulties are often the result of these injuries.⁶

The rationale (purpose) of the study was to determine the pattern of maxillofacial fractures in children reporting at Khyber College of Dentistry, Peshawar and to share these information with general dental practitioners in far flung areas and the professional colleagues, so that they could recognize the problem and manage it or refer these patients

to the specialized centers in time to avoid complications.

The facial bones of females have lower impact tolerance levels than those of males.⁷ In this study boys were more involved in fractures of facial bones than girls. The ratio of 2.5:1 is higher than the value quoted previously. Ogunlewe MO and coworkers documented 16.4% maxillofacial injuries in children, with male to female ratio of 1.5:1⁵ Al boosi and Perriman (2:1), Stylogianni (1.4:1), and near to Hall and Morgan (2.3:1). However, Maclellan reported no sex predilection.⁸

In the present study maximum facial bone fractures occurred during the age of 5-8 years and lowest 0-4 years which is comparable to the study of Ogunlewe.⁹ Age 2 years and below, the facial bone fractures were not documented in Pakistan which is also found in this study, where as it is 1% in studies of other countries.^{10,11}

During this age child moves from a state of dependence to one of independence, he or she learn to come outside his or her house to take part in different games and school activities. A basic facial series consist of three or four films i.e. periapical, Orthopantomogram (OPG), P.A View of face, PNS, and sometimes Lateral View of face. Of these views the most consistently helpful view in facial trauma is OPG. It tends to show all of the major facial structures and often better than other radiographic views. C.T scan is currently the imaging procedure of choice for most of the facial fractures but its unavailability and cost are a major problem.

There have been many surveys to study the frequency of maxillofacial fractures in children according

to age, sex and site. The mandible is more involved in facial fractures than the maxilla and zygomatic bone in this study confirming observations of earlier studies.^{12,13} When the facial region is injured, the mandible is more vulnerable than the maxilla and zygomatic bone due to large size of mandible. The anterior mandible in symphysis and parasymphysis was the commonest site affected in contrast to the ramus and body as reported by others.^{12,13}

Dentoalveolar fracture were more commonly seen in the present study than zygomatic fracture as observed by Gassener and Lizuka¹⁴ and is opposite to the study done by Ogunlewe.¹ Le-Fort fractures are less common and are almost never seen below the age of 2 years.¹⁵

Shah AA and coworker reported 15% to 86.7% of fractures of mandible as compared to the present study (86%).

The highest incidence recorded was found within the age group 12-15 years (41%), with the lowest incidence occurring in the age group 0-5 years (27%). The mandibular fractures in the present study were 86%, in which parasymphysis was most common i.e 51.2%.

Stylogianni L and others documented that mandible was predominantly involved i.e 83.7% comparative to the present study result, while the incidence of midface fractures in children was very low i.e. 4.0% in this study.¹⁷

Akhtar MU and Shah AA documented that maxillofacial fractures have hardly been reported in children aged 2 years and below. The very young children had been reported with displaced mandibular chin fractures and in a few accompanied condyles.¹⁸

The differences in this study and other countries results may be due to following reasons. In this country, it is either ignored by the parents or overlooked by general practitioners. Demographic factors, socioeconomic status, educational status and safety measures taken by the patients, and non-availability of trained specialists are also contributing factors.

CONCLUSION

The pattern of maxillofacial injuries in children suggest high percentage of mandibular fractures and most common site fractured was parasymphysis

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