

# ANALYSIS OF MAXILLOFACIAL FRACTURES IN PATIENTS TREATED AT LIAQUAT MEDICAL UNIVERSITY HOSPITAL, HYDERABAD

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## ABSTRACT

*The objective of the current study was to investigate the frequency, gender and site involvement and etiology of maxillofacial fractures in patients seen at Liaquat Medical University, Hyderabad. Data of 520 patients who were hospitalized for treatment of maxillofacial fractures over a one year time period from June 2010 up to May 2011 were collected. Study design was descriptive. Male to Female ratio was approximately 4:1. Road Traffic Accidents were found to be the most frequent 415 (79%) cause of maxillofacial fractures. Maxillofacial fracture in Male 402 (77.3%) and female 118 (22.9%) and mandible fractures 315 (60%) and midface fractures 205 (40%) were found. The differential sideways distribution of fractures revealed that parasymphysis fracture was the most frequent region 215 (68%) in fractures involving mandible. Furthermore, analysis of the midface fractures indicated that zygoma fractures constituted the biggest group 130 (63%) while orbit fractures (orbit's floor and walls) were in the second place 15 (7%). Fracture maxilla 75 (36%) and Le fort II and III were the least common 10 (4.8%) fracture of the midface. The relatively high incidence of injuries resulting from road traffic accidents indicates the necessity to support legislation aimed to prevent road traffic crashes and thus to reduce maxillofacial injuries among children and adults.*

**Key Words:** Maxillofacial Fractures, analysis

## INTRODUCTION

Maxillofacial injuries can have significant long-standing esthetic, emotional and economical impact on individual. Maxillofacial fractures could present differently in different countries even within the same country. In Pakistan fatality related to Road traffic accident is the leading cause of mortality.<sup>1</sup> International studies from Jordan, Singapore, and New Zealand have reported Road traffic accident as the most common cause of maxillofacial fractures, while in the USA, Sweden, and Finland assault has been reported as the leading cause.<sup>2</sup> A clear picture of the etiologic and demographic patterns of maxillofacial injuries can assist health care professionals to deliver optimal management and treatment planning for the patients affected by traumatic maxillofacial injuries.

These data can be used to help develop appropriate preventive measures.<sup>2</sup>

Despite the increasing frequency of morbidity and mortality associated with maxillofacial fractures in Pakistan, little has been published in this regard. This is especially important since Pakistan represents a vast country with different ethnic, cultural, and environmental backgrounds.<sup>3</sup> Therefore the aims and objectives of the current study was to investigate the frequency, gender and site involvement and etiology of maxillofacial fractures at Hyderabad which is a second big city of Sindh province.

## METHODOLOGY

Data of 520 patients who were hospitalized at Liaquat Medical University Hospital for treatment of

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maxillofacial fractures from June 2010 up to May 2011 were collected. Study design was descriptive. Hyderabad has a total area of (3,198 km<sup>2</sup>)km<sup>2</sup> and according to the official census data the total population is estimated to be (5 million) distributed in urban and rural area. This hospital is tertiary referral center for Sind province and primary referral unit for emergencies in Hyderabad. Data were recorded in structured proforma.

The fractures of the mandible were grouped as condylar, coronoid, angle, body, ramus, symphysis, parasymphysis, and dentoalveolar fractures. The fractures of the middle face included Le fort I, II, III, zygoma, zygomatic arch, nasal complex, orbital wall, orbital blow out, and dentoalveolar fractures (maxillary fracture). The etiological factors were classified into seven categories, namely road traffic accidents, fall, assault, sport, industrial, animal impact, and firearm. Data were computed and analysed using SPSS version 17.

## RESULTS

Total sample size was 520 individuals. Male to Female ratio was 4:1 with distribution of males 402 (77.30%) and females 118(22.9%) respectively (Table-1 ).

Road traffic accidents were found to be the most frequent cause of maxillofacial fractures. The remain-

TABLE 1: GENDER DISTRIBUTION OF PATIENTS

No.	Frequency
Male	402 (77.30%)
Female	118 (22.9%)
Total	520

TABLE 2: ETIOLOGY OF MAXILLOFACIAL FRACTURE

Etiology	No.	Percentage
Road Traffic Accidents	415	79%
Fall	65	12%
Assault	25	4.80%
Sport	4	0.76%
Industrial	2	0.38%
Animal	1	0.19%
Firearm	7	1.88%
Total	520	

TABLE 3: DISTRIBUTION OF TYPE OF MAXILLOFACIAL INJURY

Description of injury	No. of injuries	Numbers %
Zygoma	130	63%
Fracture maxilla	75	36%
Lefort I	40	7%
Fracture orbit	15	2%
Lefort II & III	10	4%
Fracture nasal bone	5	0.09%
Fracture mandible	315	60%
Total	520	

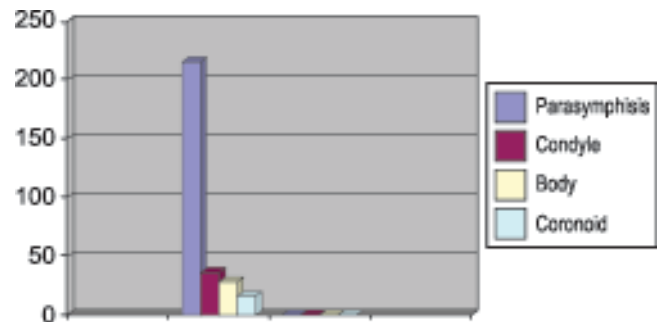


Fig 1: Distribution of Mandible Fracture.

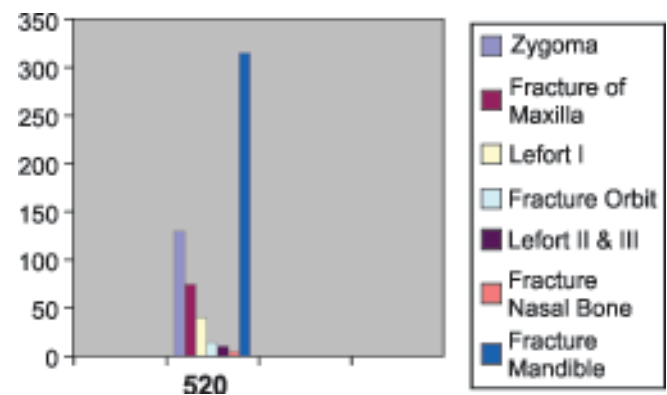


Fig 2: Frequency of maxillofacial injury

ing causes included falls, assaults, sports, industrial, animal bite, and firearm accidents respectively in descending order as detail is shown in Table 2 and figure 1. Table 2 explains an etiological approach to the site of the fractures in patients. RTAs and shotgun accidents constituted the most and least frequent causes of fractures in patients both for the mandible and the mid face.

In 520 patients Mandible fractures and mid face fractures were found. The differential sidewise distribution of mandibular fractures revealed that parasymphysis fracture was the most frequent region in

fractures involving mandible as detailed in Figure-2. This was followed by the fractures of the body, condylar region, coronoid process on the other hand was the least common area in the mandible to be affected by fracture (Figure-2). Furthermore, analysis of the mid face fractures indicated that zygoma fractures constituted the biggest group while orbit fractures (orbit's floor and walls) were in the second stand. Fracture of maxilla and Le fort II and III and nasal fractures were the least common fractures of the mid face as detailed in Table 3.

## DISCUSSION

The individuality of maxillofacial fractures depends a lot on a variety of factors such as geographical location, culture, and socioeconomic background of the communities<sup>2</sup> epidemiological surveys across the world have revealed that some aspects of the facial fracture patterns remain similar among the various nations. Epidemiological studies are necessary to find out the necessities of any population to improve the quality of life and health of the citizens of any country. The epidemiology of maxillofacial trauma can provide information about how people are injured and know how the geographic area, the socioeconomic status, the traffic and social behavior can influence the type of trauma<sup>4</sup>. This startlingly high variety of dissimilarity may be recognized by the fact that in Punjab and Karachi due to the environmental and cultural backgrounds women are much more involved in outdoor activities (driving etc.) resulting in their increased vulnerability to fracture accidents.<sup>3</sup> The male predominance is also observed in this study and is almost a universal finding reported (3:1).<sup>5</sup> in close harmony with the reported ratio (3:1) in the neighbouring country, India.<sup>6</sup> This harmony is specially conceivable when we take into account the fact that the population in this study was mainly predominated by a Sindh rural population who reside in the interior of Sindh, indicating the influence of ethnicity and culture on the maxillofacial fractures. If we consider male-to-female proportion as an indirect index for social and economic activities, we may see Sindhi speaking women in outdoor socioeconomic activities, but no change in male to female ratio is seen compared to national and international studies.

In coincidence with the changes in the community lifestyle, transportation, and legislative measures, the

causes of maxillofacial fractures also tend to change. As a result etiologies differ in various parts of the world. In most developed countries of Europe and North America, violence and sports are increasingly<sup>7</sup> replacing traffic accidents while in many developing countries traffic accidents remain the dominant cause.<sup>8</sup> In Pakistan, RTAs are considered to be the second highest cause of mortality (the highest is coronary heart disease). In this study, RTAs was the commonest cause and made up 40% of all the incidences. Although when compared with the reports from highly developed countries<sup>9</sup>, this figure is relatively high, but this is considerably lower when compared with the previous reports from Pakistan<sup>11</sup> with other developing countries<sup>12</sup> and also from the neighboring country, Pakistani police department initiated a program of increased observation on fulfillment with wearing seat belt and helmet, speed control, and road safety measurements to combat the situation to decrease the RTA.<sup>13</sup> The second and third most common etiologies of fractures in the current study were falls, assault and gun shot respectively which is comparable with other reports from the regional countries such as India.<sup>6</sup> However, it should be noted that some victims of assault may state fall instead of violence as the cause of fracture and thus contribute to this sequence.

It has been said that in the maxillofacial region, the mandible is more vulnerable than the zygomatico-maxillary complex perhaps because of its position in the face and its prominence.<sup>14</sup> The osteology of mandible, various muscle attachments and their influence, and the presence of developing or completed dentition all play a role in the mandible's weaknesses.<sup>15</sup> In the present study, the mandibular fracture (71.5%) outnumbered those of the midface (28.5%). This does not correlate positively with the other previous reports.<sup>16</sup> Higher frequency of zygoma fracture in the mid face is noticed because of its prominence and vulnerability during traffic accidents.<sup>17</sup> It is also interesting to note that in the mandible condylar and ramus fractures were the commonest sites which may be a reflection of the background etiology of road traffic accident.<sup>18</sup>

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