

**ORIGINAL ARTICLE****FACIAL BONE FRACTURES: A RETROSPECTIVE STUDY OF 485 CASES IN 5 YEARS**Rajneesh Jindal<sup>1</sup>, Neera Jindal<sup>1</sup>, Ankur das<sup>2</sup><sup>1</sup>Associate Professor, <sup>2</sup>Assistant Professor, Department of Orthopaedics, Mayo Institute of Medical Sciences Barabanki, U.P. , India**ABSTRACT**

**Background:** Facial bone fractures are very common injuries in young adults and represent the 50% of all fractures. This study was conducted to investigate and analyze the epidemiology of facial bone fractures. **Materials & Methods:** This study was conducted in department of orthopaedics from 2010 to 2015. Records of 485 facial fractures in 650 patients were retrieved from department. **Results:** Out of 485 fractures, 460 (70.7%) were seen in males and 190 (29.3%) were seen in females. The difference was statistical significant. 70 fractures were seen in maxilla, 201 in mandible, 190 in zygomatico-maxillary complex region and 15 in naso-fronto-orbital-ethmoid-complex region. Maximum fractures were seen in age range 21-30 years both in males (120) and females (55). Road traffic accidents were the most common reason (70%), followed by sports injury (12%), work place injury (10%) and fall (8%). The difference was statistically significant. **Conclusion:** Facial bone fractures are common in young adults. Therefore proper care and prevention should be taken to avoid fracture of facial bones.

**Key Words:** Facial fracture, road traffic.

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**INTRODUCTION**

Bone fractures are considered a major public health problem in Western society, not only for being related to a high mortality rate but also for having a great impact onto the health system.<sup>1</sup> Among various fractures, facial fractures are common given the anatomically exposed position of the face and the fragility of its bones. Facial fractures may result in functional and aesthetical impairments.<sup>2</sup> The epidemiology of facial fractures varies in type, severity, era geographic, socioeconomic, and cultural factors. Maxillofacial fractures affect a significant portion of trauma patients. They can occur isolated or in combination with other serious injuries, including cranial, spinal, upper and lower body injuries. Facial fracture patients may experience a variety of concomitant injuries with some of them being life threatening such as head injury.<sup>3</sup> Interpersonal violence is reported as their leading cause in the industrialized world while road traffic accidents are predominant in developing countries. An understanding of the behavior patterns of

people in different countries, the frequency and case distribution of facial fractures can assist in establishing research priorities for effective treatment and prevention of these injuries.<sup>4</sup> This study aims to report the frequency, etiologies and demographic characteristics distribution of facial fractures, in a 5-year retrospective survey.

**MATERIALS AND METHODS**

This study was conducted in department of orthopaedics from 2010 to 2015. Patients's records were retrieved from the department. Records that did not have complete information about the trauma were excluded. The diagnosis of fracture was based on clinical and radiological criteria. The data collected included the patient's age and gender, the etiology and the site of the facial fracture, the existence and type of other injuries.

Results thus obtained were subjected to statistical analysis. The Chi Square test was used. P value < 0.05 was considered significant.

**RESULTS**

Table I shows distribution of facial fractures. Out of total 485 fractures in 650 patients, 70 were seen in maxilla, 210 in mandible, 190 in ZMC and 15 in naso-fronto-orbital-ethmoid-complex region. The difference was statistically significant. Table II shows age and gender distribution of patients. Out of 650 fractures, 460 (70.7%) were seen in males and 190 (27.35) in females. Maximum fractures were seen in age range 21-30 years both in males (120) and females (55). Age group 31-40 years showed 92 males and 43 females. 84 males and 23 females were in age group 41-50 years. 11-20 years age group showed 64 males and 33 females. 51-60 years age group showed 50 males and 17 females. 61-70 years age group showed 32 males and 12 females. The difference was statistically significant.

Table III shows distribution of fractures in different regions. Number of fractures in maxilla was 70 (14.4%) which involves lefort I fracture (10), lefort II (20), lefort III (25) and alveolar process (15).

In mandible total fractures were 210 (43.2%). Maximum fractures were seen in symphysis (55), angle (45), body (42), condyle (34), alveolar process (10), ramus (22), alveolar process (10) and coronoid process (2). Zygomatic complex fractures were seen in 190 (39.1%) cases. It involves zygomatic bone (125) and zygomatic arch (65). Naso-fronto-orbital-ethmoid complex fractures were seen in 15 cases (3%). The difference was statistically significant. Table IV shows distribution of various injuries. Oral mucosa wounds were seen in 38 cases, facial wounds in 102 cases, brain injury in 46 cases, skull fracture in 59 cases, limb injury in 17 cases, chest injury in 12 cases and spinal injuries were seen in 6 cases. The difference was statistically significant.

Table V shows different etiologies for fractures. Road traffic accidents were the most common reason (70%), followed by sports injury (12%), work place injury (10%) and fall (8%). The difference was statistically significant.

**TABLE I:** Distribution of facial fractures

TOTAL FRACTURES- 485				
MAXILLA	MANDIBLE	ZYGOMATIC COMPLEX	NASO-FRONTO-ORBITAL-ETHMOID-COMPLEX	P VALUE
70	210	190	15	0.01

**TABLE II:** Age and gender distribution

AGE RANGE	MALE	FEMALE	P VALUE
0-10	18	7	0.02
11-20	64	33	
21-30	120	55	
31-40	92	43	
41-50	84	23	
51-60	50	17	
61-70	32	12	
<b>TOTAL</b>	<b>460 (70.7%)</b>	<b>190 (29.3%)</b>	

**TABLE III:** Distribution of fractures in different region

REGION	NUMBER	P VALUE
<b>MAXILLA</b>	<b>70</b>	0.05
LEFORT I	10	
LEFORT II	20	
LEFORT III	25	
ALVEOLAR PROCESS	15	
<b>MANDIBLE</b>	<b>210</b>	
SYMPHYSIS	55	
BODY	42	
RAMUS	22	
ANGLE	45	
CONDYLE	34	
CORONOID PROCESS	2	
ALVEOLAR PROCESS	10	
ZMC	190	
ZYGOMATIC BONE	125	
ZYGOMATIC ARCH	65	
NASO-FRONTO-ORBITAL-ETHMOID-COMPLEX	15	

**TABLE IV:** Distribution of other injuries

S.NO	INJURIES	NUMBER	PERCENTAGE	P VALUE
1.	ORAL MUCOSA WOUND	38	13.5	0.03
2.	FACIAL WOUND	102	36.4	
3.	BRAIN INJURY	46	16.4	
4.	SKULL FRACTURE	59	21	
5.	LIMB INJURY	17	6	
6.	CHEST INJURY	12	4.2	
7.	SPINAL INJURY	6	2.1	
<b>TOTAL</b>		<b>280</b>		

**TABLE V:** Distribution of fractures on the basis of etiology

ETIOLOGY	ROAD TRAFFIC ACCIDENT	FALL	WORK PLACE INJURY	SPORTS INJURY
<b>NUMBER</b>	340	39	48	58
<b>PERCENTAGE</b>	70%	8%	10%	12
<b>P VALUE</b>	0.02			

**DISCUSSION**

Epidemiological studies are necessary to determine the requirements 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 this type of trauma.<sup>5</sup> Furthermore, monitoring trends in the occurrence of maxillofacial trauma allows adjustments to be made in the training and continuing professional development in a timely fashion.

The present study was aimed to report the frequency, etiologies and demographic characteristics distribution of facial fractures, in a 5-year retrospective survey.

Out of total 485 fractures in 650 patients, 70 were seen in maxilla, 201 in mandible, 190 in ZMC and 15 in naso-fronto-orbital-ethmoid-complex region. Deogratiuset al.<sup>6</sup> reported 314 patients in a 5-year period in Tanzania and Adebayo et al.<sup>7</sup>, 443 patients in 10-year period in Nigeria.

Out of 650 fractures, 460 (70.7%) were seen in males and 190 (27.35) in females. The higher prevalence of males as compared to females may be explained by the fact that women are involved in domestic activities rather than outdoor tasks and motorbicycle riding. Gassner et al.<sup>8</sup> reported male: female ratio of 2.1:1 in Austria that they explain by a greater involvement of women in economic activities outside the home. However, Al Ahmed et al.<sup>9</sup> reported a male: female ratio of 11:1 in the United Arab Emirates that they attribute to the cultural setting in where men usually do outdoor work and few women drive of 11:1 in the United Arab Emirates that they attribute to the cultural setting in where men usually do outdoor work and few women drive.

Maximum fractures were seen in age range 21-30 years both in males (120) and females (55).

The higher incidence of facial fractures recorded in young adults can be explained by the greater mobility and

consequently more susceptibility to traffic accidents and urban violence in young males, due to their social and economic activities. It's also generally known that this group of population has risky behavior such as irresponsible driving or riding and is more involved in brawls.

More number of mandibular fractures was seen as compared to maxillary fractures. These findings are in contrast with those of a study published in Austria<sup>10</sup>, which presented the middle third of the face as the most injured site of the face, and those of Palma et al. (1995)<sup>11</sup>, which reported an incidence of 21.9% of mandibular fractures in the population studied. Facial fractures were associated with various injuries. Such as oral mucosa wounds, facial wounds, brain injury, skull fracture, limb injury, chest injury and spinal injuries. Among etiologies for fractures, road traffic accidents were the most common reason (70%), followed by sports injury (12%), work place injury (10%) and fall (8%). Our results are in agreement with the results of various studies.<sup>12,13</sup>

**CONCLUSION**

Author concluded that road traffic accidents are more common cause of facial bones trauma seen in young adults with male predominance. However other large scales studies are required to substantiate the results obtained in this study.

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