

## RETROSPECTIVE ANALYSIS OF 268 CASES OF FRACTURES OF MANDIBLE

\* SHUJA RIAZ ANSARI, BDS, MDSc (UK)

\*UMAR KHITAB, BDS, MSC (UK)

\*\*ZAHUR QAYYUM, BDS, MCPS

\*\*\*ASMATULLAH KHATTAK, BDS, MCPS

### ABSTRACT

*The purpose of the study was to determine the causes of fractures of mandible, age groups and gender involvement in North West Frontier Province of Pakistan. This study was conducted at Khyber College of Dentistry, Peshawar University Campus from 1st January to 31st December 2002. 268 patients with mandibular fractures were recorded in this study. The patients age range was from 2 to 70 years.*

*Out of 268 cases of mandibular fractures, 118 patients (44%) were the result of road traffic accidents. Interpersonal violence was responsible for 67 cases (25%) while 43 cases (16%) were due to fall. 35 patients (13%) were found due to gun shot injuries and 5 cases (2%) were due to other injuries. 213 patients (79.4%) were male, thus male to female ratio was 3.87:1*

**Key words:** Mandibular fractures, Road traffic accidents, Etiology.

### INTRODUCTION

The history of facial fractures is as old as the history of mankind. The mandible is one of the most exposed bone of the facial skeleton and is frequently traumatized. The etiology has always included road traffic accidents interpersonal violence, and particularly in ancient times the primitive ways of battle. With time the battlefield have changed and other causes of mandibular fractures have been added to the list, for example road traffic accidents. The earliest reported literature is from the days of hypocrites and then from the work of one of the greatest physician of middle ages namely Abu-Ali Al Hysayn Ibn—Sina (980-1037) more commonly known as Avicenna in the west. He laid emphasis upon the correct occlusion after reduction of fracture<sup>1</sup>.

The demographic data related to mandibular fractures are difficult to evaluate because of the many

variables associated with the studies. The statistics related to mandibular fractures are available from the countries throughout the world. However, most are retrospective. The demographic data on maxillo facial injuries in the english language journals mostly comes from USA,<sup>2,3,4,5,6</sup> England<sup>7</sup>, Germany<sup>8,9</sup> Netherland<sup>10</sup> and other countries throughout the world are well represented.

The data from industrial nations with large number of vehicles tend to show multiple mandibular fractures occurring with sever concomitant facial fractures and associated non —maxillofacial injuries situations that require extensive treatment. Statistics from smaller developing countries tend to show that mandibular fractures are usually isolated, single, non displaced fracture caused by assaults and are treated only by inter maxillary fixation. Thron and colleagues<sup>11</sup>, reported that 156 jaw fractures in Greenland (90%) were due to interpersonal violence, where as Adekeye

\* Asst Prof Oral Surgery, Khyber College of Dentistry, Peshawar University Campus

\*\* Fellowship Resident Khyber College of Dentistry, Peshawar

\*\*\* Senior Registrar Oral Surgery Unit, Sardar Begum Dental College, Peshawar

**Correspondence to:** Dr Shuja Riaz Ansari, Asst Prof Oral Surgery, Khyber College of Dentistry, Peshawar University Campus, Pakistan. [E-mail: shujha\\_ansari@hotmail.com](mailto:shujha_ansari@hotmail.com)

<sup>12</sup>, in study of facial fractures in Nigeria, reported that 76% were related to vehicular accidents. Oslon and associates demonstrated that vehicular accidents were the cause of fractures in 48% where as in the study of Ellis and co workers<sup>13</sup>, vehicular accidents account for only 15% of the fractures. The difference may be explained by the environmental and social characteristics of the locality under study. However, there are few reports on mandibular fractures in this region. The purpose of this study was to determine the common age group, sex and the causes of mandibular fractures in North West Frontier Province of Pakistan.

## MATERIALS AND METHODS

This was a retrospective study to determine the age groups, sex and causes of mandibular fractures. For this purpose the record of treated patients at the Oral and Dental Hospital, Maxillofacial Unit of Khyber College of Dentistry, University Campus of Peshawar with mandibular fractures from 1<sup>st</sup> January 2002 to 31<sup>st</sup> December 2002 was checked. Total number of patients with mandibular fractures was 268. A list of patients was initially compiled from operation theatre book. This information was then checked by collecting the patients name and their hospital registration number and from the files of all the patients available in the record section of Maxillofacial Surgical Unit. The information so collected showed road traffic accidents, interpersonal violence, fall, sports, gunshot and other injuries.

The Oral and Maxillofacial Surgical Unit of Khyber College of Dentistry is a tertiary care center for the North West Frontier Province of Pakistan. This unit receives patients from the entire region and also from some parts of Punjab that are located near to this hospital.

## RESULTS

During the one-year period 268 patients with mandibular fractures were treated. The patients age at the time of injury ranged from 2 to 70 years with a mean age 19.8 years. Most cases (158) 58.9% were between the ages of 10 to 40 years. The peak incidence was associated with 2 to 10 years of age which accounted for 72 cases (26.8%) of the sample. It seems that mandibular fractures decreased with age as 18 cases (6.7%) in 40 to 50 years and 17 cases (6.3%)

between 50 to 60 years and only 3 cases (1.1%) were between 60 to 70 years of age. (Fig 1). 213 patients (79.4%) were male. Thus male to female ratio was 3.87:1. (Table 2)

The causes of mandibular fractures are listed in table 1. The most common cause was road traffic accidents. 118 cases (44%), followed by interpersonal violence 67 cases (25%) and fractures associated with the fall 43 cases (16%), gun shot injuries 35 cases (13%), and 5 patients (2%) were due to other causes.

Different methods of treatment of reduction and fixation were used in the treatment of mandibular fractures. Close reduction was done in 219 cases (81.7%). The number of patients treated by intermaxillary fixation using eyelets and tie wires was 164 (61.19%) and 55 patients (20.5%) were treated with arch bars and elastics or acrylic splints or gunning splints. Forty-nine patients (18.2%) were treated by open reduction and intra osseous wiring.

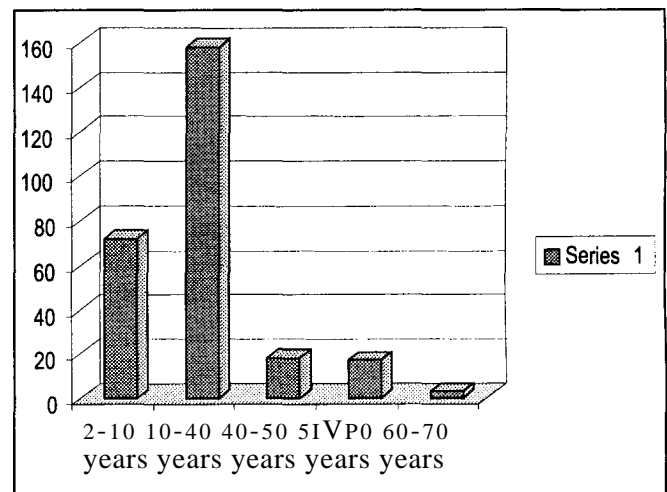


Fig 1. Shows the age groups of patients

TABLE 1: SHOWS ETIOLOGY OF MANDIBULAR FRACTURES

Etiology	Patients	%age
RTA	118	44
IVP	67	25
Fall	43	16
G.shot	35	13
Others	5	2

TABLE 2: SHOWS SEX DISTRIBUTION

No.	Male patients	Female patients
1	213	55

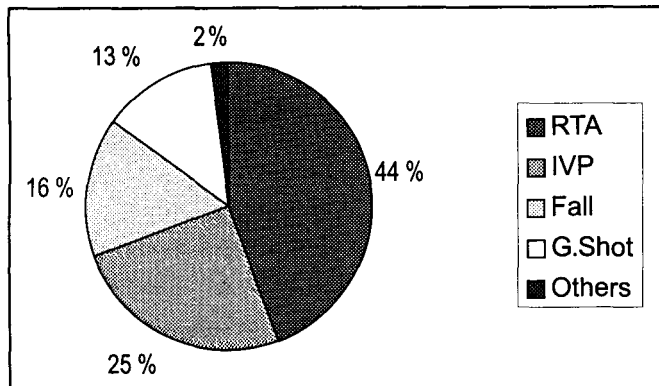


Fig 2. Shows the etiology of mandible fracture

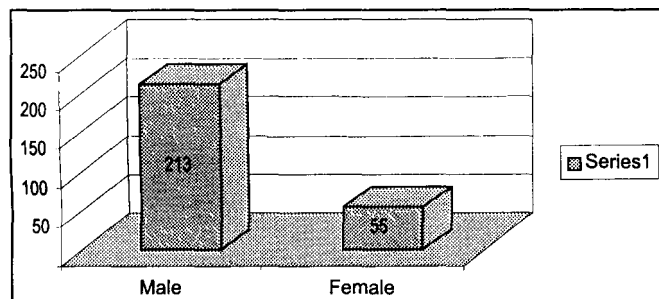


Fig 3. Shows sex distribution

## DISCUSSION

The results of epidemiological surveys on the causes and incidence of maxillofacial fractures tend to vary with geographic region, socioeconomic status, culture and era.<sup>14,15</sup> Previous studies show that female is less commonly affected than male. With male to female ratio 5.4:1. Our study show more or less the same results when compared with the work of Vanttooff and Merckx. The male to female ratio in studies<sup>10,16</sup> is 3.87:1. The most of previous studies<sup>10,16</sup> show road traffic accidents as the most common cause of maxillofacial fractures. In our study the cause of mandibular fractures 44% (118 cases) is due to road traffic accidents which supports the previous work. In one study conducted in the same setting in 1991<sup>17</sup>, showed fall was the predominant cause of facial fractures. But our study shows that road traffic accident is the major cause of mandibular fractures. This shows that the causes of fracture of facial skeleton have changed with the time.

The ratio in favor of men can be explained by the fact that the majority of such fractures result from road traffic accidents, violence, fall and gunshot injuries, where men are more often exposed to such hazards, in our setup. The low ratio of female in our study was because of relative inactivity of female in the socioeconomic life of this region of Pakistan.

The predominant age group in this study ranges from 18 to 40 years, male in second to fourth decades constituted the major group which is the most active period of life, e.g., social activities, business, sports, high speed transportation, which make them more vulnerable. The etiological causes of facial fractures have changed over the last four decades and they continue to do so. The contemporary causes of facial fractures in order of frequency are interpersonal violence, sports injuries, and fall and road traffic accidents. The developed countries show a striking reduction in the broad category of road traffic accidents, and the increasing influence of interpersonal violence. This was not the case in our study. Road traffic accidents were by far the most common cause of mandibular fractures. The high number of mandibular fractures due to road traffic accidents in our country is due to the lack of road sense among the road users, over speeding, under 'age drivers, slow moving vehicles on roads like tractor trolleys, bad conditions of vehicles, over loading and bad conditions of roads. Large number of people belong to low socioeconomic group in this part of the country and they use public transport. Vehicles are operated by drivers having bad road sense which lead to accidents. This is one reason for high number of road accidents in our society. In developed societies drivers follow the road traffic regulations rather more strictly. Moreover, the seat belt regulations have also lead to reduction in road traffic accidents. The interpersonal violence is a common cause in most developed countries due to the consumption of alcohol in these societies. But in our country alcohol is prohibited legally and culturally. That's why interpersonal violence is low in our society. Fairly high numbers of firearm injuries recorded in this study were due to tribal quarrels and mode of life in North West Frontier province of Pakistan where most of the people possess arms.

## CONCLUSION

The result of this study shows that road traffic accident is most common cause of mandibular frac-

tures in this region. That is due to lack of road sense in road users, poor conditions of the vehicles, increased traffic load and poor conditions of roads. There is need of continuous campaigning to inculcate the habit of driving safely and according to the rules. Seat belt regulations should be enforced. That will reduce the incidence of facial fractures in underdeveloped countries.

## REFERENCES

1. Raymond JF, Robert VW, Norman JB, Dexter B Oral and maxillofacial trauma In; Concepts and techniques of rigid fixation. 20d Ed 1997;1275.
2. Dingman RO, Natvig P. Surgery of facial fractures Philadelphia. WB Saunders, 1964.
3. Mallett SP. Fractures of the jaw; a survey of 2124 cases. J Am Den Assoc 1950. 14:657.
4. James RB, Fredrickson C, Kent JN. Complication of mandibular fractures. J Oral Surg 1981;39:275.
5. Moor GF, Olson TS, Yonkers AJ. Complication of mandibular fractures. A retrospective review of 100 fractures in 56 patients Neb Med J 1985. 70:120.
6. Oslen RA, Fonseca RG, Zeitler DR, et al. Fracture of the mandible. A review of 580 cases. J Oral Maxillofac Surg 1982;40:23.
7. Hill CM, Crosher RF, Mosam DA. Dental and facial injuries following sports accidents; A study of 130 patients. Br J Oral Maxillofac Surg 1985;23:268.
8. Bochlogross PN. A retrospective study of 1521 mandibular fractures. J Oral Maxillofac Surg 1985; 48:597.
9. Linn EW, Vrijhof MMA, Dewijn RJ, et al. Facial injuries sustained during sports and games. J Maxillofac surg 1986;14:83.
10. Vanttoof RF, Merckx CA, Steketenburg EC. The Different patterns of fractures of facial skeleton in four European countries. Int J Oral Surg 1977;6:3.
11. Thorn J, Mogettaft M, Hansen PK. Incidence and aetiological pattern of jaw fractures in Greenland. Int J Oral Maxillofac Surg 1986;15:372.
12. Adekeye EO, The pattern of fractures of the facial skeleton in Kuduwa, Nigeria. A survey of 1447 cases Oral Surg Oral med Oral Pathol 1980;49:491.
13. Ellis E, Moos KF, El Attar. Ten year of mandibular fractures; An analysis of 2137 cases .Oral Surg Oral Med Oral Pathol 1985;59:120.
14. Telfer MR, Jones GM, Shepherd JP. Trends in the etiology of maxillofacial fractures in the united Kingdom .Br J Oral Maxillofac Surg. 1991;29:250.
15. Tnaka N, Tomitsuka K, Shionoya K, Andov H, Kimijim, Tashir T, et al. Aetiology of maxillofacial fractures. Br J Oral Maxillofac Surg. 1994; 32:19.
16. Albos BO. Maxillofacial injuries in the western state of Nigeria. Br J Oral Maxillofac Surg. 1986;24:31.
17. Din Q. Anylisis of 362 cases of maxillofacial injuries in northern region of Pakistan. Pak Oral Dent J 1999; 11:35.