

**Maxillofacial Injuries in Northern  
Region of Pakistan - Analysis of 362  
Consecutive Cases**

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**Summary**

*Three hundred and sixty two patients with different types of facial bone fractures were investigated and treated at Dental Hospital/Khyber Teaching Hospital, Peshawar from 1.1.1986 to 31.12.1987. The results of this two years retrospective study were different in some aspects from similar studies in other countries. 33.7% were caused by falls. The mandibular body was the most frequently fractured area and 22.1% were children upto ten years of age.*

**Introduction**

There is abundant literature regarding maxillofacial injuries, the causes of which vary from country to country according to the socio-economic and cultural states. The aim of this 2 years retrospective study is to add Pakistani experience, in terms of incidence, sites of fracture and aetiology of these injuries.

**Material**

Three hundred and sixty two consecutive patients with injuries to maxillofacial skeleton were treated between January 1986 and December 1987 at Oral and Maxillofacial surgical unit of Oral and Dental Hospital and Khyber Teaching Hospital, Peshawar.

Mandibular fractures were classified as: condyle, ramus, angle, body and symphysis. Middle third fractures were classified into Le Fort I, Le Fort II, Le Fort III, zygomatic complex, zygomatic arch and orbital floor alone.

Many patients sustained multiple facial bone fractures and were classified in more than one category.

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Isolated nasal complex fractures were excluded as they were mainly treated in the E.N.T. Department. Dento-alveolar fractures were excluded as most were treated in casualty on an outpatient basis. Afghan refugees were treated but excluded from this study as these were fire-arm injury cases.

### **Methods**

Simple methods for reduction and immobilization were applied without the use of any devices for external fixation. Fractures of the mandible were treated by eye-let wiring, arch bar, acrylic cap splint and Gunning splint. Open reduction with transosseous wiring was also performed where indicated.

Fractures of the middle third were treated by intermaxillary fixation and circumzygomatic suspension wiring. Depressed fractures of zygomatic complex were reduced through caldwell luc approach with or without antral pack. Transosseous wiring was carried out where required. Isolated fractures of zygomatic arch were elevated through Gilles approach.

### **Results**

Three hundred and nineteen patients (88.12%) were male, while 43 patients (11.88%) were female, with male to female ratio of 7.4:1 (Table I). The extremes of age in this study range from 2 to 70 years and the peak incidence lies between the ages of 11-20 years (Table II).

The aetiology of the fractures of 362 patients appears in Table III. Two hundred and fifty one patients (69.34%) sustained mandibular fractures, 81 patients (22.37%) sustained fractures of the middle third and in 30 patients (8.29%) both mandible and middle third were involved. Three hundred and sixty two patients sustained 546 fractures. Their site and distribution is given in Table IV and Table V.

Table VI shows that 239 (66.02%) had their fractures reduced in a closed manner, while 93 (25.69%) needed open reduction either intra-orally or extra-orally.

Numerous methods of fixation were either employed alone or in combination: this form of treatment being most suitable for our patients, and the results were quite satisfactory. Eye-let wires were employed most commonly in 231 (53.47%) patients and circumzygomatic suspension wires secured to teeth by eye-let wires or Archbat in 99 (22.92%) patients were found to be useful (Table VII).

## Discussion

The incidence of fractures was far higher in males than females. It was found that 88.12% of the facial fractures occurred in males and 11.88% in female. The ratio of male to female was 8.4:1. Kening<sup>2</sup> reported a male incidence of 77.8%. Chuong<sup>3</sup> revealed a male preponderance of 73.3%. The explanation offered by Khalil and Shaladi<sup>6</sup> for low female representation viz, the Islamic culture and relative inactivity of females in the socio-economic life of that African subregion, is also true for northern region of Pakistan.

The highest incidence of maxillofacial injuries occurred in first, second and third decades and the lowest in the sixth decade. The highest incidence in second and third decade is well understood as these are the most active years of life. The incidence of fractures in children upto 10 years of age was found to be 22.10% of the total and is probably the highest figure recorded so far. Kapoor & Srivastava<sup>5</sup> and Khalil & Shaladi<sup>6</sup> have reported it 15% and 13.2% respectively. Most of the series from U.S.A. and Europe reported that injuries in children under the age of 11 years account for only 5% of the total. The possible explanation for this substantial incidence in developing countries is that child population is far higher in proportion to the total. Thus higher proportion of injuries in children is to be expected because of higher number of families with many children together with limited number of kindergartens and nurseries<sup>6,11</sup>.

Falls accounted for 33.70% of the fractures and this is the highest figure recorded in literature. Von Hoof<sup>12</sup> and Mullar<sup>10</sup> found this figure 13.1% and 28% which include industrial accidents as well. It is worth mentioning that only one patient was epileptic in this specific group of the present series. Road traffic accidents caused 30.66% of fractures. This figure is consistent with the study of Lamberg<sup>8</sup>. Though the roads have improved in Pakistan and particularly in N.W.F.P. but old vehicles and lack of road sense are the two main reasons for road traffic accidents in this part of the world. Fire-arm injuries at 18.23% is the reflection of the increasing incidence of this type of fight in North West Frontier Province of Pakistan. This in turn has lead to low incidence of hand to hand fight which resulted in 8.84% fractures. However, fire-arm injuries together with fights (18.23+8.84) = 27.07% is still a low figure compared with 34.8% of Harnische, 30.7% of Lindstorm<sup>9</sup>, and 43% of Lamberg<sup>8</sup>. The only reason that can be attributed to the low figures of fights in N.W.F.P. is prohibition of alcohol in this society. There is no doubt that alcohol intoxication plays a major role in assaults or fights. In my experience in England, treating maxillofacial injuries, a high proportion of our patients were under the influence of alcohol on admission to hospital.

Mandibular fractures were more common (69.34%) than middle third injuries (22.37%) or combined fracture patterns (8.29%). Abiose<sup>1</sup> found these figures as 75%, 16.35% and 8.65% respectively.

The body of the mandible was the most common site of fracture (34.61%) followed by the fracture in subcondylar region (22.16%). Killey<sup>7</sup>, Dingman and Natvig<sup>4</sup>, and Lamberg<sup>8</sup> in their series found that mandibular condyle is the most common site of all facial bone fractures. However, the more recent series from Nigeria (Abiose<sup>1</sup>) and India (Balakrishnan<sup>2</sup>) also reported that mandibular body is the most common site of facial bone fractures.

### **Conclusion**

The highest incidence of maxillofacial injuries occurred in second decade. Falls and road traffic accidents were the largest factors for these injuries and the body of the mandible was the most common site involved followed by subcondyle region. Extreme preponderance in males and the highest incidence of paediatric fractures were significant in this study.

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TABLE I  
RECRUITMENT

	No. of Patients	Percentage
Male	319	88.12
Female	43	11.88
Total	362	100

TABLE II  
AGE AT THE TIME OF FRACTURE

Age in years	No. of Patients	Percentage
0-10	80	22.10
11-20	105	29.00
21-30	80	22.10
31-40	45	12.43
41-50	24	6.62
51-60	22	6.08
61-70	6	1.66
Total	362	100

TABLE III  
AETIOLOGY OF MAXILLOFACIAL FRACTURES

	No. of Patients	Percentage
Falls	122	33.70
Road traffic accidents	111	30.66
Fire-arm injuries	66	18.23
Fights	32	8.84
Sports	17	4.70
Pathological	14	3.87
Total	362	100

TABLE IV  
SITE AND DISTRIBUTION OF MANDIBULAR FRACTURES

	No.	Percentage
Body	189	34.61
Condyle	121	22.16
Symphysis	37	6.78
Angle	32	5.86
Ramus	15	2.75
Total	394	72.16

**TABLE V**  
**SITE AND DISTRIBUTION OF MIDDLE THIRD FRACTURES**

	No.	Percentage
Lefort I	61	11.17
Lefort II	47	8.60
Zygomatic complex	29	5.31
Zygomatic arch	15	2.75
<b>Total</b>	<b>152</b>	<b>27.83</b>

**TABLE VI**  
**METHOD OF REDUCTION**

	No.	Percentage
Close Reduction	239	66.02
Open Reduction	93	25.69
No active Treatment	30	8.29
<b>Total</b>	<b>362</b>	<b>100</b>

**TABLE VII**  
**METHODS OF FIXATION**

	No. of fixation	Percentage
Eye-let wires	231	53.4
Circumzygomatic suspension wires	99	22.92
Transosseous wires	33	7.64
Gilles approach	29	6.71
Arch bar	26	6.02
Gunning splint	10	2.31
Acrylic cap splint		0.93
<b>Total</b>	<b>432</b>	<b>100</b>



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