

## RETROSPECTIVE ANALYSIS MANDIBULAR FRACTURES AT ABBASI SHAHEED HOSPITAL, KARACHI

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### ABSTRACT

*Objectives of this study were to assess the presentation and management of mandibular fractures. This retrospective study was carried out in the Department of Oral & Maxillofacial Surgery, Abbasi Shaheed Hospital Karachi.*

*Sample size was 263. Male: female ratio 15:1. Audit period was from Jan 2010 to Dec 2012. The road traffic accident was leading cause 80%, while fall 7%, assault represented 7%, fire arm injuries 5% and sports injuries were 1%. Site distribution of mandibular fractures 11.78% occurred in the condyle, 19.39% at angle of jaw. In 23.95% or the body, 27.96% parasymphysis, 8.36% Symphysis, 2.28% ramus and in 6.0% dento-alveolar areas were involved. Different treatment modalities were used for the proper reduction and fixation of the fracture. Majority of the patients were treated with open reduction with miniplates fixation.*

*It was concluded that majority of patients belonged to 2nd decade of life with male predominance, parasymphysis and body were the commonest sites of mandibular fractures and road traffic accident was the leading cause of trauma in the studied subjects.*

**Key Words:** Etiology, Fracture, Mandible, Zygomatic Bone Complex.

### INTRODUCTION

Mandibular fractures constitute a major proportion of cases of maxillofacial trauma.<sup>1,2</sup> It has been reported that fracture of mandible account for 36% to 59% of all maxillofacial fractures, because of its prominent position on face and its U shape makes it more vulnerable to fracture in more than one place.<sup>3</sup>

Etiology varies from country to country and they can usually be attributed to cultural, social, environmental and economic factors. Road traffic accident (RTA) is the most common cause of mandible fracture in developing countries while in assault or interpersonal violence

mandibular fracture commonly seen in developed countries.<sup>4,5</sup> The age range is 20-50 years and second decade is most commonly seen along with male predilection.<sup>5,6</sup> Most of the studies reported Parasymphysis and Angle as the commonest sites of mandible fracture.<sup>5,7,8</sup>

Treatment options are intermaxillary fixation after the proper reduction of fracture segments or open reduction and internal fixation with mini-plates, reconstruction plates or with trans-osseous wiring and it depends upon the type, site and extent of fracture.<sup>8,9</sup>

The aim of the study was to assess common etiological factors, type of mandibular fracture and management of such injuries provided at Abbasi Shaheed Hospital.

### METHODOLOGY

This 3 years retrospective study was carried out at Oral & Maxillofacial Surgery Department of Abbasi Shaheed Hospital, Karachi, which is a tertiary care unit of Karachi city with catchment population of around 3 million. Records of 263 patients were taken from the Hospital who were provided treatment from Jan 2010 to Dec 2012.

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**Received for Publication:** July 10, 2014

**Revision Received:** December 15, 2014

**Revision Accepted:** January 2, 2015

**Inclusion Criteria:** Clinically evident signs and symptoms of mandibular fractures, radiological evidence of mandibular fracture any age group.

**Exclusion Criteria:** Medically compromised patients, previously maltreated or untreated. Associated or other facial skeletal fractures.

**Data Analysis Procedure:** Data were analyzed through SPSS 16.0. The frequency and percentage was computed for qualitative variables, like gender, etiologies, pattern and management modalities. Mean  $\pm$  standard deviation was computed for qualitative variables, like age. No inferential test was applied due to retrospective case series statistics.

## RESULTS

A total of 263 patients reported to Oral & Maxillofacial Surgery Department having facial trauma during the three year period. Mandible was the commonest bone to fracture 189 (71.86%), followed by Zygomatico-maxillary complex 47 (17.87%) and maxilla 27 (10.26%).

There was a male predilection (93.6%) with male to female ratio was 15:1 and second decade was most common age involved.

The common etiological factor for mandibular fractures was road traffic accidents 211 (80.22%), followed by falls 19 (7.22%), fire arm injuries 13 (4.95%), assaults 18 (6.84%) and Sports injuries 2 (0.76%).

The commonest site of mandibular fracture was parasymphysis (27.96%), followed by body (23.95%), angle (19.39%), condyle (11.78%), Symphysis (8.36%), dento-alveolar (6.0%), ramus (2.28%) and then coronoid (1.14%). As shown in Table 1.

Regarding the management modalities of mandibular fractures open reduction and internal fixation with miniplates was the preferred method of treatment (40.30%) while maxillo-mandibular fixation via eyelets (20.15%) and arch bar was done in (18.25%) of patients Table 2.

## DISCUSSION

Mandible is the heaviest as well as strong facial bone that is prone to fracture because of its prominent position on face and its hyper flexion and extension mechanism during any accident.

The causes and incidence of maxillofacial fractures vary with geographic region, socio economic status, culture, religion and era.<sup>9</sup> The results of this audit are largely in agreement with those of previous reports. Males accounted for 93.6% of all patients with mandibular fractures similar to those reported by Roode GJ

TABLE 1: DISTRIBUTION OF SITE OF MANDIBULAR FRACTURES

Fracture Site	Frequency	Percentage
Condyle	31	11.78%
Coronoid	03	1.14%
Ramus	06	2.28%
Angle	51	19.39%
Body	63	23.95%
Parasymphysis	71	27.96%
Symphysis	22	8.36%
Dentoalveolar	16	6.00%
Total	263	100%

TABLE 2: MANAGEMENT MODALITIES FOR MANDIBULAR FRACTURES

Modalities	Frequency	Percentage
MMF via Arch bar	48	18.25%
MMF via Eyelets	53	20.15%
Circum-mandibular wiring	06	2.28%
Occlusal Splint	05	1.90%
ORIF via wiring	45	17.11%
ORIF via bone plating	106	40.30%
Total	263	100%
Dentoalveolar	16	6.00%
Total	263	100%

83.2%,<sup>4</sup> Kamali U 84.3%,<sup>5</sup> Bormann KH 74%,<sup>7</sup> Atilgan S 70%<sup>8</sup> and P Dongas 81.7%.<sup>10</sup> The male to female ratio was 15:1. This is slightly more than majority of mandibular fracture studied around the world.<sup>4,5,10</sup>

The reason for a male preponderance in this study was due to the fact that males are the main earner of the family and work outdoor and most of them drive motorbikes. They do not wear helmet and drive recklessly making them more vulnerable to maxillofacial trauma.

The highest incidence of mandibular fractures occurred in second decade of life, in both males and females. This is consistent with the findings of previously published studies.<sup>3-10</sup>

The same findings have also been reported by Kamali U<sup>5</sup> et al in their five years retrospective study. In their study, motor vehicle accidents were the main cause of the mandibular fractures (92.5%) similar results were shown by Bormann KH,<sup>7</sup> Kadkhodaie MH,<sup>11</sup> Adekeye EO<sup>12</sup> and Gupta AK.<sup>13</sup>

In some other studies, conducted in developed countries assault or interpersonal violence have been the commonest cause of mandibular fractures, as reported by P Dongas and GM Hall<sup>10</sup> and Lee KH.<sup>14</sup>

Moreover, the events of assaults usually result after alcohol consumption, as described in previous studies. Therefore, the difference in results reflects low alcohol consumption because of Islamic culture which absolutely prohibits drugs and alcohol.

The most common site for mandibular fracture was parasymphysis 27.96%, followed by body 23.95% and condyle 11.78%. This result is consistent with the studies done in other parts of Pakistan,<sup>15,16</sup> Studies done by Subodhet al<sup>17</sup> in India, Ozkaya O<sup>9</sup> in Turkey and Elgehani RA<sup>18</sup> in Libya reported the same fracture sites in mandible.

However, in some other studies angle of mandible was the commonest site of fracture. P Dongas<sup>10</sup> in his study "mandibular fracture patterns in Tasmania, Australia" reported that the site most frequently fractured was the angle of the mandible (32%). Similar findings were reported by Mahdi M<sup>19</sup> in Iraq, Atanasov DT<sup>20</sup> in Bulgaria, Sakr K<sup>6</sup> in Egypt and Bouguila J<sup>21</sup> in Tunisia.

Kamali U et al<sup>5</sup> in their five year retrospective study found parasymphysis (23%) and the angle (23%) were the commonest sites of fracture in mandible.

These observations show that in the developed countries angle and body are most common place for the mandible to fracture in alleged assaults, and in developing countries parasymphysis and body are predominant position resulting from road traffic accidents.

In recent years there has been a trend towards open reduction and internal fixation as the choice of treatment for mandibular fractures<sup>7</sup>. In the present study 106 (40.30%) patients were treated by open reduction and internal fixation with miniplates; while 101 (38.40%) patients were treated via closed reduction with arch bar and eyelets. These findings are similar to those reported by P Dongas<sup>10</sup> in Australia, Bormann KH<sup>7</sup> in Germany and Martini MZ<sup>22</sup> in Brazil.

However, other studies reports closed reduction and external fixation as the most common treatment modality used for mandibular fractures.<sup>4,7,23</sup>

## CONCLUSION

It was concluded from the present study that majority of the patients belonged to 2nd decade of life with male predominance. Parasymphysis and body were the commonest sites of mandibular fractures and road traffic accident was the leading cause of trauma in this population.

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