

## ORIGINAL ARTICLE

# Mandibular Bone Fractures in elderly patients with reference to etiology of trauma

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## ABSTRACT

**Aim:** to explore the mandibular bone fractures in elderly patients with reference to etiology of trauma.

**Methodology:** This was a descriptive study conducted in the department of Oral and Maxillofacial Surgery KEMU/ Mayo Hospital Lahore. Elderly patients (age 60-100years) with mandibular bone fractures.

**Results:** Aetiology of trauma leading to mandibular fractures was as follows; there were 79(65.83%) cases of RTA, 32(26.66%) falls, 4(3.33%) assaults and there were only 3(2.5%) cases of industrial injury.

**Conclusion:** To conclude, this study depicts that road traffic accidents were the predominant cause of injury in the studied age group. Elderly patients need more care and attention, especially after traumatic incidents and lead to financial burden in hospitals

**Keywords:** Maxillofacial trauma, Elderly population, Mandibular injuries, Elderly fractures

## INTRODUCTION

The prevalence of maxillofacial injuries in young adults and children is well studied but only few studies have focused on Asian elderly populations<sup>1</sup>. The uncommonness among geriatric population regarding facial fractures is maybe the cause why the problem has appealed comparatively little consideration in the research<sup>2</sup>. The highly exposed region of the body is Maxillofacial area, and therefore exposed to trauma. Facial bone fractures may occur alone or in combination with other bone fractures. Pattern of fracture depends on mechanism of trauma.<sup>3</sup> Mandible is the only mobile 'U' shaped bone in maxillofacial skeleton which articulates with skull. Fractures of the mandible are typically described with location in 6 anatomic regions along the bone, named; Symphysis, parasymphysis, body, ramus, condyle and coronoid.<sup>4</sup> Currently, in elderly population, traumatic injuries have been growing because of improved life span with medical advancements, resulting in a greater percentage of older people in the population, with a more active life style. Therefore the number of older people seeking the treatment for maxillofacial fractures is expected to increase proportionally<sup>5,6</sup>. Bone atrophy, decreased capacity for tissue repair, and chronic diseases are known to influence fracture patterns in elderly patients<sup>7</sup>. In geriatric population, the 5<sup>th</sup> primary reason of death is trauma. Visual and hearing issues, proprioception's changes, weakness of muscles and slow reflexes are the reasons due to which the chance of falling or experiencing other trauma increases<sup>2</sup>. Due to various age-related physiologic changes and chronic illnesses as osteoporosis and cardiovascular disease, trauma has a greater physical impact on this age group<sup>8</sup>. Trauma in elderly patients tends to complicate many medical demands already in place because they arrive with many comorbid states, when compared to other age groups they have much reduced tolerance to an injury which further leads to many complications<sup>9</sup>. The aim of the study was to explore the

mandibular bone fractures in elderly patients with reference to etiology of trauma.

## METHODOLOGY

This was a descriptive study conducted in the department of Oral and Maxillofacial Surgery KEMU/ Mayo Hospital Lahore. Elderly patients (age 60-100years) with mandibular bone fractures who presented from January 2018 to January 2019 were included. Fractures were diagnosed on the basis of clinical and radiographic examination. The patients who presented within 24 hours of injury and falling within defined age group were included in the study. Patients having pathological fractures, not falling in the defined age range and those with delayed presentation were excluded from the study. Variables noted included patient demographics, different causes of injury and site of mandibular bone fracture. Descriptive statistics were used to present data.

## RESULTS

A total of 120 patients were included in the study. Their age ranged from 60 – 85 years. Mean age was 70.7 years (Std. Deviation 6.0988). There were 81(67.5%) male patients and 39(32.5%) female patients in the study (Fig 1).

There were total 161 fractures involving mandibular bone in 120 patients as 41 patients were having two fractures. The fractures involving body of the mandible were most common 58(36.02%) followed by angle 50(31.05%), condyle 34(21.1%), symphysis 10(6.21%) and Ramus fractures 9(5.59%) (Fig. 2).

Aetiology of trauma leading to mandibular fractures was as follows; there were 79(65.83%) cases of RTA, 32(26.66%) falls, 4(3.33%) assaults and there were only 3(2.5%) cases of industrial injury (Fig. 3).

Fig.1: Gender distribution of the patients

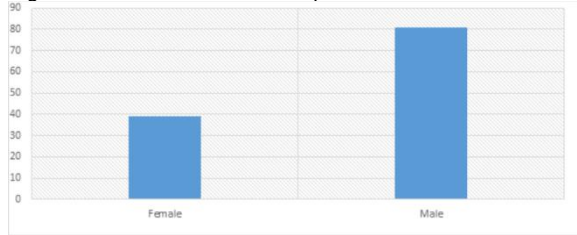


Fig 2: Different sites involved by fractures

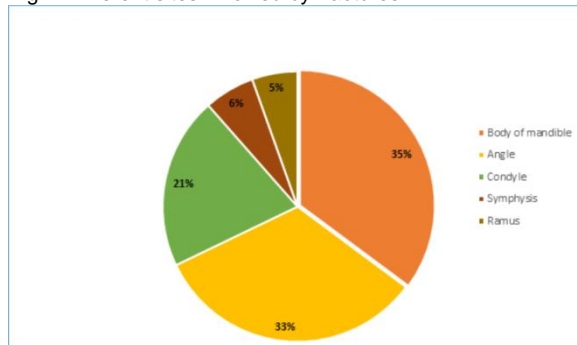
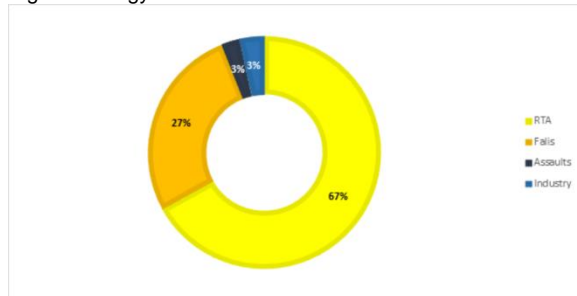


Fig. 3. Etiology of trauma



## DISCUSSION

Epidemiological surveys of maxillofacial injuries are varied across different parts of the world and depend on different cultural values; geographic condition and socioeconomic status.<sup>10, 11</sup> Mandibular fractures are most common fractures which facial trauma surgeons come across and their incidence being double the incidence of mid-face fractures.<sup>8</sup>

Among all mechanisms of injury males are more commonly affected by trauma.<sup>12</sup> The present study also shows a male predominance as 67.5% of the patients were males. These results are in consistent with a study that was conducted in a Malaysian Hospital on total 134 patients who were 60 years of age or older were, there were 101 (74.5%) men and 33(24.6 %) women.<sup>1</sup> This male predominance is due to the fact that males are mainly involved in outdoor activities thus more exposed to different mechanisms of injury, while females are engaged in indoor activities.<sup>12</sup> Zerkén et al and Ramos Chrcanovic also described the same male predominance in their studies.<sup>7,13</sup>

These results are in contrast to another study that was conducted in Finland, the study comprised total 117 patients who were 65 years of age or older than this. There were 45.3 % male patients and 54.7% female patients.<sup>2</sup>

Causes of maxillofacial injuries varies with age, falls and bicycle related injuries are most common in very young children, as the age of children increases sports and motor vehicle related injuries become common.<sup>14</sup> Violence becomes a common cause of injury in teenagers and has been reported as a single most common cause of injury in adults<sup>15</sup>, as the age increases the etiology of facial trauma changes as the most common causes of trauma in elderly population are falls, motor vehicle accidents and assaults<sup>2</sup>.

Declining visual acuity, peripheral vision, cognitive impairment, difficulty in judgment and attention have been proposed as factors that cause older drivers to collide with a crossing vehicle, which they did not saw or noticed so late that it was difficult to avoid. In general when compared to younger people, elderly people are less likely to be involved in RTAs but they are more likely to be seriously injured and prone to death.<sup>1</sup>

In the present study predominant cause of injury was RTA 79(65.83%) falls were the second most common (26.66%), assaults counted for (3.33%) and industrial injury (2.5%). Same trends were observed in another study on geriatric trauma where causes of injury were as follows; RTA (64.2%) being most common cause followed by falls (23.1%) being second most common cause and Industrial injuries counted for (0.7%), others (3%)<sup>1</sup>. In a study on elderly population road traffic accidents were most common cause of injury in population with age range 60-69 years, while in patients older than 70 falls were the most common cause of injury.<sup>12</sup> These findings are in contrast to another study where predominant cause of injury in older population were falls and more than 50% of the fractures were caused by falls, followed by RTA; industrial injuries and assault related injuries rarely occurred.<sup>16</sup> According to another study conducted in Australia the predominant cause of facial injuries in older population was falls.<sup>17</sup> Same trend was observed by Pauletti et al in an observational study on elderly facial trauma as falls were the most common cause of trauma (50%), motor vehicle accidents counted for 6.2%<sup>18</sup>.

According to another study which was conducted on elderly population (older than 60 years) in Baltimore, falls were most common cause on injury 51.8%, in our study falls counted for 27% and it was the second most common cause of injury. Road traffic accidents were the second leading cause (21%) of injury in the mentioned study while in our study RTAs were the most common (67%) cause. Assault related injuries were much common (8.8%) in this study as compared to our study (3%). Industry as a separate etiology was not included in this study and counted for 3% of the cases in our study.<sup>7</sup>

In the present study, mandible was most commonly fractured (36.02%) followed by angle 31.05%, condyle 21.1%, symphysis (6.21%) and Ramus fractures 5.59%. In another study, mandible was most commonly fractured 10%. But the fractures of angle region were present only in 1.2% cases.<sup>1</sup> In another study Condyle (14%) was the most commonly fractured site but in our study body (35%) of the mandible is most commonly fractured. In this study the proportion of angle and ramus fractures was same while in ours angle fractures were 33% and ramus counted for 5% only. Symphysis fractures were 6% in our population and 4% in above mentioned study.<sup>2</sup>

Same frequency pattern was observed in another study where mandible fractures were most common as in the present study, but the frequency of condylar fractures was much lower (4.6%) as compared to our study (27%). In this study angle fractures were 1.3%, ramus fractures 3.1%, symphysis 0.6%, while in our study percentage were much higher that is angle 33%, ramus 5%, symphysis 6%.<sup>7</sup> Geriatric facial trauma can produce significant mortality and morbidity that's why it is a growing public health concern. It can lead to decreased quality of life, increased psychological stress, depression, and post-traumatic stress disorders. In addition health care expense for treating fractures in elderly patients has been found to run into tens of millions of dollars each year<sup>19</sup>.

## CONCLUSION

This study depicts that road traffic accidents were the predominant cause of injury in the studied age group. Elderly patients need more care and attention, especially after traumatic incidents and lead to financial burden in hospitals. There is a need to implement different strategies to reduce incidence of trauma in this age group to lessen the economic burden of treating these patients.

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