

An Assessment of Maxillofacial Injuries: A 5-Year Study of 2112 Patients

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Objective: To assess the etiology and pattern of maxillofacial injuries in our settings.

Study design: Retrospective Study

Place: and Duration: This study was carried out at the department of Oral and Maxillofacial Surgery, Pakistan Institute of Medical Sciences (PIMS) between January 2005 and December 2009

Materials and Methods: Records of patients who were either treated in the Emergency Room as outpatients or in the Department of Oral and Maxillofacial Surgery as indoor patients were analyzed. Age, gender, cause, site and type of injury and treatment provided were recorded.

Results: Out of 2112 patients, 73% ($n=1533$) were male and 27% ($n=579$) were female. 48% of the patients were in the 13-30 year age bracket. Road traffic accidents accounted for the majority (57%) of cases of maxillofacial trauma while soft tissue injuries were the most frequently seen injury (43%). Mandible was seen as the most commonly fractured bone 75.6% ($n=712$) and majority of the bony maxillofacial injuries were treated by open reduction and internal fixation (ORIF).

Conclusion: Road traffic accidents were clearly the most prevalent etiological factor for maxillofacial trauma, therefore better, stricter road safety laws need to be evolved and implemented.

Key Words: Maxillofacial trauma, road traffic accident, Islamabad, Pakistan.

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Introduction

Injuries to the maxillofacial region present one of the most challenging problems for healthcare professionals worldwide. Particular interest is created by the high incidence and diversity of facial lesions.¹ Fractures of the facial skeleton are invariably associated with substantial morbidity, disfigurement, functional deficit and high cost for treatment.²

The causes of maxillofacial injuries have changed over the past three to four decades and continue to do so. Road traffic accidents are reported as the main cause of facial injuries in literature from developing countries whereas interpersonal violence remains the leading etiological source in the developed world.³ With regard to the anatomical sites, mandibular and zygomatic complex fractures account for the majority of all facial fractures and their occurrence varies according to the mechanism of injury and demographic factors, particularly, gender and age.⁴ The coordinated and sequential collection of information concerning

demographic patterns of maxillofacial injuries may assist health care providers to record detailed and regular data of facial trauma. Consequently an understanding of the cause, severity, and chronological distribution of maxillofacial trauma permit clinical and research priorities to be established for effective treatment and prevention of these injuries.⁵

This study was developed because there is insufficient literary evidence from our region to accurately illustrate the etiology of these injuries. It is worthwhile to mention here that data on the etiology of maxillofacial injuries is essential to reflect upon the effectiveness of preventive measures, such as the introduction of seat belt and helmet legislations and to evolve further improved regulations.

Materials and Methods

We undertook a retrospective study of maxillofacial injuries at Pakistan Institute of Medical Sciences, Islamabad between January 2005 and

December 2009. Records of patients who were either treated in the Emergency Room as outpatients or the Department of Oral and Maxillofacial Surgery as indoor patients were analyzed. Age, gender, cause, site and type of injury and treatment provided were recorded.

Results

A total of 2112 patients were included in the study. 73% ($n=1533$) were male and 27% ($n=579$) were female (Figure 1). The maximum number of patients ($n=1009$) in our study fell in the 13 to 30 year age bracket.

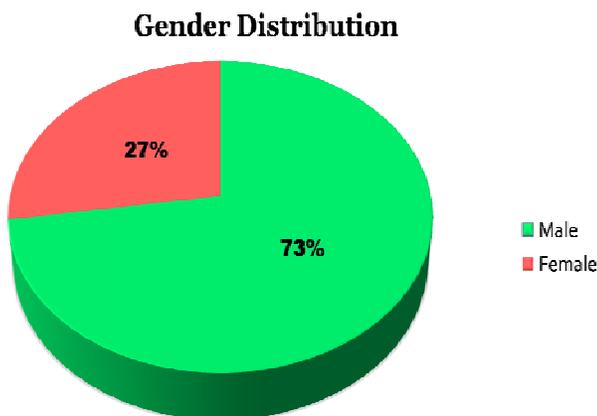


Figure 1: Gender Distribution

Road traffic accidents were seen as the main etiological factor resulting in maxillofacial injuries ($n=1202$) followed by fall ($n=231$) and natural disaster (Earthquake) ($n=207$) (Table I).

Table I : Etiology

	Patients	Percentage
Road Traffic Accidents	1202	57%
Fall	231	11%
Natural Disasters	207	10%
Assault	142	7%
Firearm Injury/Blast	98	4%
Others	232	11%
Total	2112	100%

Isolated soft tissue trauma was the most commonly seen maxillofacial injury ($n=904$). The bone most commonly involved was the mandible; fractured in a total of 712 patients, either alone or in combination with maxilla or zygoma (Table II).

Table II: Pattern of injuries

Site	Patients	Percentage
Mandibular	594	28%
Maxillary	92	4%
Zygomatic	97	5%
Maxillo-Mandibular	50	2%
Naso-orbito-ethmoidal with zygomaticomaxillary complex	40	2%
Zygomatico-Maxillo-Mandibular	68	3%
Soft tissue	904	43%
Dental	267	13%
Total	2112	100%

Out of a total of 941 patients that sustained maxillofacial fractures, 67.5% ($n=641$) were exclusively treated by open reduction and internal fixation (ORIF), 23.4% ($n=221$) by closed reduction and 8.9% ($n=84$) by a combination of open with closed reduction.

Discussion

Geographical location, culture, socioeconomic status, gun and road safety regulations influence the causes and incidence of maxillofacial trauma.⁴ The predominance of men is a consistent finding in literature from around the world.⁶⁻⁷ The male to female ratio in our study was 2.7:1 which is in accordance with other regional as well as international studies⁸⁻¹⁰ however in another study from Pakistan¹¹ this ratio is as high as 32:1.

Second and third decade of life is universally the most active period and youth are frequently involved in high speed transportation, outdoor contact sports and engage in acts of affray.¹²⁻¹³ In our study 13 to 30 year age group was the most populous in conformity with other studies.

Maxillofacial injuries are commonly caused by motor vehicle accidents, assaults, sports, industrial accidents, natural disasters and warfare. In this study motor vehicle accidents were the most common cause of trauma, comprising 57% of the etiology of injuries assessed. This figure was 62% in one study from India¹⁴, 40% from the United States¹⁵, 24.7% from England¹, 48% in a study from France, 55.2% in a study from Jordan¹² and 44% in a study from Pakistan.¹⁷

An etiological factor exclusive to our series was the devastating earthquake of October 8, 2005 that hit the northern part of Pakistan leaving about 74,000 people dead and another 100,000 injured. 207 of these patients who sustained maxillofacial injuries (10% of our study population) were managed at our centre.

Soft tissue lacerations and avulsions were the most prevalent injury recorded in our study 43% ($n=904$). This finding is consistent with a study from India¹⁴ that recorded this percentage at 42% while another study from Brazil¹⁸ showed it at a much higher level of 58.5%.

Mandible was seen as the most predominantly fractured bone in our series accounting for 75.6% ($n=712$) of the fractures. This finding is consistent in a similar study from Bulgaria¹⁹ whereas the percentage of mandibular fracture in a study from Pakistan¹⁷ and UAE²⁰ was 51%. Isolated nasal bone fractures were excluded from this study due to the fact that in our settings, the department of ENT manages these types of injuries.

Conclusion

In view of the results of this study it can very easily be speculated that the leading cause of maxillofacial trauma in our setting is road traffic accidents. Better road safety laws need to be evolved but more importantly enforced. Public should be made aware of road safety legislations and the subsequent repercussions of failure in compliance. We additionally recommend that further, more elaborate studies at other maxillofacial trauma centers should be conducted to decisively attribute cause to maxillofacial trauma in Pakistan.

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