

ORIGINAL ARTICLE

PRESENTATION OF MAXILLOFACIAL INJURIES IN THE 2005
EARTHQUAKE VICTIMS

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Background: Earthquakes cause a lot of damage to life and property. Maxillofacial injuries constitute an important proportion of injuries in earthquakes and some 13% of the trauma patients after the earthquakes suffer from maxillofacial injuries. The objective of this study was to assess the presentation of maxillofacial injuries in earthquake victims. **Methods:** This descriptive study was conducted at the Department of Oral and Maxillofacial Surgery, Dental Section Ayub Teaching Hospital, Abbottabad from October 8th, 2005 to January 8th, 2006. Three hundred and seventy-eight patients were included in this study in the three months following the October 8th, 2005 earthquake on consecutive non-probability sampling basis. **Results:** Isolated facial bone fractures rather than the multiple bone fractures were the commonest type of fractures in earthquake victims. A significant number of patients presented with only soft tissue injuries and no bony fractures. **Conclusion:** Although considerable number of patients with fracture of multiple facial bones were present in the earthquake victims but isolated facial bone fractures and soft tissue injuries were the commonest type of injuries.

Keywords: Earthquake, multiple facial bone fractures, isolated facial bone fractures

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INTRODUCTION

Natural calamities such as floods, cyclones, volcanic eruptions, tsunamis and earthquakes can cause a lot of damage to life and property, and cause disturbance to our day-to-day life. In the history of Pakistan, undoubtedly the largest and most devastating natural disaster was the earthquake which jolted the northern areas of Pakistan on October 8th, 2005 measuring 7.6 on Richter scale.¹ Balakot, Bagh, Muzaffarabad, and Rawalakot were the mainly affected areas.² More than 80,000 people lost their lives and more than 100,000 were injured.³

Maxillofacial injuries constitute an important proportion of injuries in the earthquakes.⁴ A survey conducted by a mobile surgical team after the 8th October earthquake shows that 13% of the trauma patients were suffering from maxillofacial injuries.⁵ Various studies conducted on the pattern of maxillofacial injuries in the earthquake victims show that multiple fractures of facial bones are the commonest type of fractures.^{2,6} However, isolated facial bone fractures are the main kind of routine trauma fractures.^{7,8}

As almost all local hospitals in affected areas were collapsed, the injured patients were evacuated and treated at various hospitals of Abbottabad, Islamabad and Rawalpindi. Among them Ayub Teaching Hospital (ATH) holds a unique importance since it was the hub of all rescue operations and drains patients from Northern Areas of Pakistan and Azad Kashmir. Maximum numbers of patients were brought here for initial management and stabilisation after the disaster.

The patients requiring extensive surgeries and management were referred to various hospitals in Rawalpindi, Islamabad and Lahore due to overwhelming number of patients and lack of space.

The aim of this study was to observe the pattern of maxillofacial injuries in the earthquake victims, and to compare them with the normal routine trauma cases.

MATERIAL AND METHODS

This descriptive study was conducted at the Department of Oral and Maxillofacial Surgery, Dental Section, Ayub Medical College from October 8th, 2005 to January 8th, 2010. In the three months following the earthquake, a total of 378 patients, with various fractures presented in Oral and Maxillofacial Surgery Department at ATH. After their initial emergency management and stabilisation, they were thoroughly examined and assessed clinically and radio-graphically. Orthopantomogram, Submentovertex, Occipitomental and Posteroanterior views were performed. CT scan and MRI could not be utilised even for multiple fractures.

Almost all the patients with facial fractures were managed by closed reduction and maxillo-mandibular fixation (MMF). Open reduction and internal fixation was not primarily used due to its increased cost, time required and decrease number of skilled staff for this purpose.

These patients were then compared to 1,788 patients of maxillofacial fractures that presented as routine trauma cases at Department of Oral and Maxillofacial Surgery, Dental Section, Ayub Medical College from 1st January 2000 to 31st December 2010

excluding the three months after earthquake. Data were entered and analysed using SPSS-12.

RESULTS

Out of 378 patients, 204 (54%) were male, while 174 (46%) were female. The mean age of the patients was 28.6 years (range 2–70 year). Out of the total of 378 patients, 132 (34.92%) patients were below the age of 20 years, 178 (47.09%) were between the age of 21 and 40 years, 62 (16.4%) were between the age 41 and 60 years, and 6 (1.59%) patients were above the age of 60 years (Table-1).

Out of the 378 patients, 131 (34.6%) presented with various types of mandibular fractures, 47 (12.4%) presented with maxillary fractures, 38 (10%) presented with zygomatic complex fractures and 44 (11.6%) presented with various combination of multiple fractures. Thirty-six (9.5%) patients were having dentoalveolar fractures, and 74 (19.5%) were having various kinds of soft tissue injuries. Six (1.6%) patients were

having temporo-mandibular joint problems like dislocations and trismus, and 2 patients presented with acute exacerbation of well controlled trigeminal neuralgia (Table-2).

Table-1: Age-wise distribution of earthquake victims sustaining maxillofacial injuries

Age Group (Years)	No.	%
1–20	132	34.92
21–40	178	47.09
41–60	62	16.4
>60	6	1.59

Table-2: Patients on basis of type of injuries

Type of injury	No.	%
Mandibular fracture	131	34.6
Maxillary fracture	47	12.4
Zygomatic complex fracture	38	10
Combination fractures	44	11.6
Dentoalveolar trauma	36	9.5
Soft tissue injuries	74	19.5
TMJ problems (dislocation+trismus)	6	1.6
Neuralgia (aggravated by stress)	2	0.5

Table-3: Comparison of maxillofacial injuries (Earthquake vs Routine Trauma) [n (%)]

Type of injury	Earthquake victims ATH	Earthquake victims AFID ²	Routine trauma ATH from 2000–2010	Routine trauma Rows & Killy ⁸
Mandibular fracture	131 (34.6)	64 (36.4)	1148 (64.2)	871 (58)
Maxillary fracture	47 (12.4)	2 (1.1)	188 (10.5)	172 (11.5)
Zygomatic Complex fracture	38 (10)	18 (10.2)	320 (17.9)	298 (19.8)
Multiple fractures	44 (11.6)	57 (32.4)	132 (7.3)	128 (8.5)
Soft tissue injuries	74 (19.5)	12 (6.8)	-	-
Dentoalveolar trauma	36 (9.5)	14 (8)	-	-
TMJ injuries	6 (1.6)	9 (5.1)	-	-
Isolated nasal fracture	-	-	-	31 (2.2)
Neuralgia	2 (0.5)	-	-	-
Total patients	378	176	1,788	1,500

DISCUSSION

Earthquakes are one of the worst natural disasters. In the history of Pakistan, the earthquake of October 8th, 2005 was the most devastating natural disaster that this nation has ever suffered. More than 80,000 people died and more than 100,000 people were injured, besides countless being homeless.

Considerable number of patients sustain maxillofacial injuries during an earthquake. October 8th, 2005 earthquake was no exception. Studies conducted on the pattern of maxillofacial injuries in the earthquake victims shows that multiple fractures of the facial bones are more common than isolated facial bone fractures in earthquake victims in contrast to routine trauma cases.^{2,4,6}

In our study although the patients with fracture of multiple facial bones were there but isolated facial bone fractures were the commonest type of fractures. Mandible was the most commonly fractured bone followed by maxilla and zygomatic complex which is also true for routine trauma cases. Compared to other studies a considerable number of earthquake victim were having only soft tissue trauma. An interesting observation in our study was the two earthquake victims

that presented to us with acute exacerbation of trigeminal neuralgia which was well under control with medications prior to earthquake. Stress after such a disaster may probably be the reason behind such an exacerbation.

Almost all patients having facial bone fractures were treated with closed reduction and maxillo-mandibular fixation (MMF). Although open reduction and internal fixation (ORIF) should have been the preferred treatment, but due to lack of sufficient number of skilled staff and huge number of patients pouring into the hospital, this could not be the primary choice of treatment. MMF and closed reduction, though not the ideal treatment options, still give quite good and acceptable results in emergency situations like earthquake.

Many difficulties were encountered during management of earthquake victims, like

- Proper aseptic conditions could not be maintained
- Open reduction and internal fixation could not be utilised due to lack of facilities
- CT scan and MRI were not available, mainly due to damage to infra-structure

- Extensive surgical procedures were difficult to be carried out because of lack of aseptic conditions, skilled maxillofacial surgery staff and equipments
- Only temporary, make-shift 'Operation Theatres' with improper arrangements for operations were available

Suggestions:

- Properly trained emergency response teams including maxillofacial surgeons should be present at major hospitals
- Properly equipped mobile OT's must be provided at major hospitals
- Frequent refresher courses for all medical staff be arranged to cope with natural disasters

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