

# Clinical Features and Outcomes of Chest Trauma at a Tertiary-Care Centre

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## Abstract

**Background:** Chest injuries are associated with significant morbidity and mortality. This prospective study was carried out in a tertiary-care center to assess clinical features and outcomes of Chest Trauma.

**Material and methods:** This prospective study was carried out in a tertiary-care center to assess clinical features and outcomes of Chest Trauma. The study was carried out for a period of 2 years and the no. of participants included in the study was 230. The data from hospital records of past one year was analyzed. Data included mode of injury, types of chest injuries and outcome was recorded. Statistical analysis was conducted on SPSS software windows version 20. A P value of <0.05 was considered significant.

**Results:** A total of 230 patients data were included in the study who were admitted in the hospital with chest injury. Most of the injuries in this study were from road traffic accidents (50%). Assaults were the second most common mode of injury (36.95%). Among the type of injuries, abrasions were most common followed by bruises, laceration. Most of the cases were managed conservatively (53.04%). 39.26% patients required intercostal chest tube drainage. Mortality was seen in 3.47% patients, while 68.69% were discharged in a satisfactory condition.

**Conclusion:** The present study concluded that most of the injuries were from road traffic accidents. Among the type of injuries, abrasions were most common. Most of the cases were managed conservatively. 68.69% were discharged in a satisfactory condition.

**Keywords:** Chest Trauma, abrasions, road traffic accidents.

## Introduction

Trauma constitutes a major health problem in both developed and developing countries and is the leading cause of death worldwide and accounts for almost 12% of the world's burden of disease.<sup>1,2</sup> Traumatic injuries lead to 5.8 million deaths each year which accounts for 10% of the world's deaths. A trauma-related death is reported every 1.9 minutes in India.<sup>3</sup> Nearly 20 million are hospitalized every year due to injuries out of which 1 million die due to trauma-related injuries.<sup>4</sup> Thoracic trauma contributes heavily to these figures besides head injury, abdominal injury and orthopedic injuries. Approximately one quarter of civilian trauma deaths are caused by thoracic trauma and many of these deaths can be prevented by prompt diagnosis and correct management.<sup>5</sup> Thoracic cage contains the most vital organs - heart, lungs and the great vessels and it has to give protection to the vital organs as well as preserve the unique function of expansion of lungs to ensure proper oxygenation of blood. Although,

the ribs sternum and vertebral column which form this sturdy but pliable rib cage gives enough protection, there are certain weak points in this structure like the intercostal spaces, angles of ribs and costochondral junctions. Thoracic traumas might lead to severe consequences, even though less than 50% of them required a surgical revision.<sup>6</sup> The cause as well as the outcome of traumatic injury of the chest varies in different parts of the world but road side accidents (RSAs) remain as the foremost cause of majority of such injuries. Early diagnosis and treatment is life-saving for the life threatening chest injuries and best managed by early mobilization, aggressive pain control, proper fluid management, chest physiotherapy, intensive care and/or surgical intervention.<sup>7-9</sup> This retrospective study was carried out in a tertiary-care center to assess clinical Features and outcomes of Chest Trauma.

### Material and methods

This prospective study was carried out in GMC Baramulla which is a tertiary-care center in Jammu and Kashmir, India to assess clinical Features and outcomes of Chest Trauma. The study was carried out over a period of 2 years from February 2019 to January 2021 and the no. of participants included in the study was 230. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute. All patients admitted to department of surgery with chest trauma (including multiple trauma or exclusive chest injuries) were included in the study. Data included mode of injury, types of chest injuries and outcome was recorded. Statistical analysis was conducted on SPSS software windows version 20. The ANOVA test was used for univariate analysis and chi square test was used for comparison. A P value of <0.05 was considered significant.

### Results

A total of 230 patients' data were included in the study who were admitted in the hospital with chest injury. Most of the injuries in this study were from road traffic accidents (50%). Assaults were the second most common mode of injury (36.95%). Among the type of injuries, abrasions were most common followed by bruises, laceration. Most of the cases were managed conservatively (53.04%). 39.26% patients required intercostal chest tube drainage. Mortality was seen in 3.47% patients, while 68.69% were discharged in a satisfactory condition.

**Table 1: Mode of injury**

| Mode of injury      | No. of cases(%) |
|---------------------|-----------------|
| Road traffic injury | 115(50%)        |
| Assaults            | 85(36.95%)      |
| Falls               | 26(11.30%)      |
| Railway accidents   | 4(1.73%)        |

**Table 2: Type of chest injury**

| Type of injury       | No. of cases |
|----------------------|--------------|
| Bruise               | 40           |
| Abrasion             | 87           |
| Laceration           | 33           |
| Fractured ribs       | 23           |
| Fractured clavicle   | 22           |
| Flail chest          | 14           |
| Pulmonary contusions | 21           |
| Pneumothorax         | 12           |

|            |    |
|------------|----|
| Hemothorax | 25 |
|------------|----|

**Table 3: Management profile of patients**

| Management/outcome              | No. of cases(%) |
|---------------------------------|-----------------|
| Suturing under LA               | 20(8.69%)       |
| Conservative                    | 122(53.04%)     |
| Intercostal chest tube drainage | 88(38.26%)      |

**Table 4: Outcome of chest injury patients**

| Outcome                     | No. of cases(%) |
|-----------------------------|-----------------|
| Discharged                  | 158(68.69%)     |
| Referred                    | 24(10.43%)      |
| Left against medical advise | 40(17.39%)      |
| Expired                     | 8(3.47%)        |

## Discussion

Trauma is the leading cause of death and disability in the first four decades of the life and the 3rd leading cause of death worldwide.<sup>10,11</sup> The American academy of Science has labelled trauma as 'the neglected disease of modern society'. Furthermore, the bloated emphasis on Malaria, Tuberculosis, HIV and AIDS relegates trauma to an orphaned position. As in many previous findings, road traffic accident accounted for most cases of chest trauma (70.1%).<sup>12,13</sup> A total of 230 patients' data were included in the study who were admitted in the hospital with chest injury. Most of the injuries in this study were from road traffic accidents (50%). Assaults were the second most common mode of injury (36.95%). Among the type of injuries, abrasions were most common followed by bruises, laceration. Most of the cases were managed conservatively (53.04%). 38.26% patients required intercostal chest tube drainage. Mortality was seen in 3.47% patients, while 68.69% were discharged in a satisfactory condition.

According to the study conducted in United Arab Emirates on chest trauma patients the mortality rate was 7.2%. The primary cause of injury was road traffic events (66%) followed by falls (23.4%). From the total of study subjects about (36.5%) had isolated chest injury, but the remaining had associated head injury (27.4%) and extremities (50%). mortality was associated with severe head injuries ( $p < 0.0001$ ) and low systolic blood pressure on arrival.<sup>14</sup>

Kant et al. had similar findings with respect to mode of injury like the present study with road traffic injuries (63%) as the most common cause followed by assaults.<sup>15</sup>

In studies conducted by Kant et al. the most common injury in the chest was rib fractures and flail chest.<sup>15</sup>

Regarding treatment profile, intercostal drainage was required in 330 patients and thoracotomy was needed in 35 patients only. Although chest drain insertion is a quite common procedure, a correct training is required before being able to do it properly and safely.<sup>16</sup>

## Conclusion

The present study concluded that most of the injuries were from road traffic accidents. Among the type of injuries, abrasions were most common. Most of the cases were managed conservatively. 68.69% were discharged in a satisfactory condition.

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