

## Original Research

### Assessment of Cases of Chest Trauma in a Tertiary Health Care Centre

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#### ABSTRACT:

**Background:** Trauma accounts for 12% of the world's burden of disease. Chest trauma is present in about 50% of trauma victims and is the cause of death in about 25%. The present study was conducted to assess the cases of chest trauma. **Materials & Methods:** A prospective study was conducted in the department of general surgery. It comprised of 166 cases. The type of trauma, mode of trauma and physical signs and symptoms were recorded. **Results:** out of 166 patients, males were 82 and females were 84. 112 cases were of blunt trauma and 54 were of penetrating. The difference was significant ( $P < 0.05$ ). The mode of trauma was road side accident in 134, fall in 25, gun shot in 2 and physical violence in 5. Emphysema was seen in 50, clicks in 55 and crepitation in 44. **Conclusion:** Maximum cases of chest trauma were of blunt trauma followed by penetrating trauma. Mode of trauma was road side accident, fall, gun shot and physical violence. Mortality from chest trauma can be significantly reduced by development of better trauma care systems, prevention of shock and hypoxia and adherence to strict aseptic precautions to prevent infective complications.

**Key words:** Chest trauma, emphysema, road accident.

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#### INTRODUCTION

Trauma accounts for 12% of the world's burden of disease. Chest trauma is present in about 50% of trauma victims and is the cause of death in about 25%. Chest trauma is a common cause of morbidity and mortality, especially in the young patients. Thoracic injuries are the third injuries in trauma patients, after to injuries to head and extremities. Thoracic trauma has an overall mortality rate of 15–25%, which is the highest with cardiac or tracheobronchial-esophageal injuries patients. Really the presence of thoracic injuries in the setting of polytrauma can significantly increase the mortality rate. Injuries such as lung contusion, flail chest, pneumothorax and haemthorax can complicate globally a case management.<sup>1</sup>

Thoracic trauma is a significant cause of mortality. Many patients with these injuries die after reaching the hospital. However, many of these deaths could be prevented with prompt diagnosis and treatment.<sup>2</sup> Less than 10% of blunt chest injuries and only 15 to 30 % of penetrating chest injuries require operative intervention. In fact, most patients who sustain thoracic trauma can be treated by simple emergency room (ER) procedures, which are within the capabilities of most of the emergency healthcare workers.<sup>3</sup> Chest injuries contribute to around 10 % of total trauma-related deaths and 15 % of loss of disability adjusted life years (DALYS) and they are the second leading cause of death in pediatric trauma. Majority of the patients can be managed conservatively and only 10-15% cases need exploratory thoracotomy.<sup>4</sup>

Despite extensive reports relevant to blunt chest trauma in the literature, systematic quantification of the impact of chest injury severity on the outcome of polytraumatised patients has been sparse. Recent evidence has indicated that polytraumatised patients with blunt chest trauma present significant differences in mortality and morbidity among different healthcare systems.<sup>3,4</sup>

The present study was conducted to assess the cases of chest trauma.

**MATERIALS & METHODS**

The present study was conducted in the department of General Surgery, Rajshree Medical Research Institute &

**RESULTS**

Hospital Bareilly, Uttar Pradesh, India. The study was approved from institutional ethical committee and written consent was obtained from all patients. A review of prospectively collected data in our trauma unit was undertaken. It comprised of 166 cases reported to department.

Data such as name, age, gender etc. was recorded. The type of trauma, mode of trauma and physical signs and symptoms were recorded. Results thus obtained were subjected to statistical analysis. p value less than 0.05 was considered significant.

**Table I Distribution of patients**

Total- 146		
Gender	Males	Females
Number	82	84

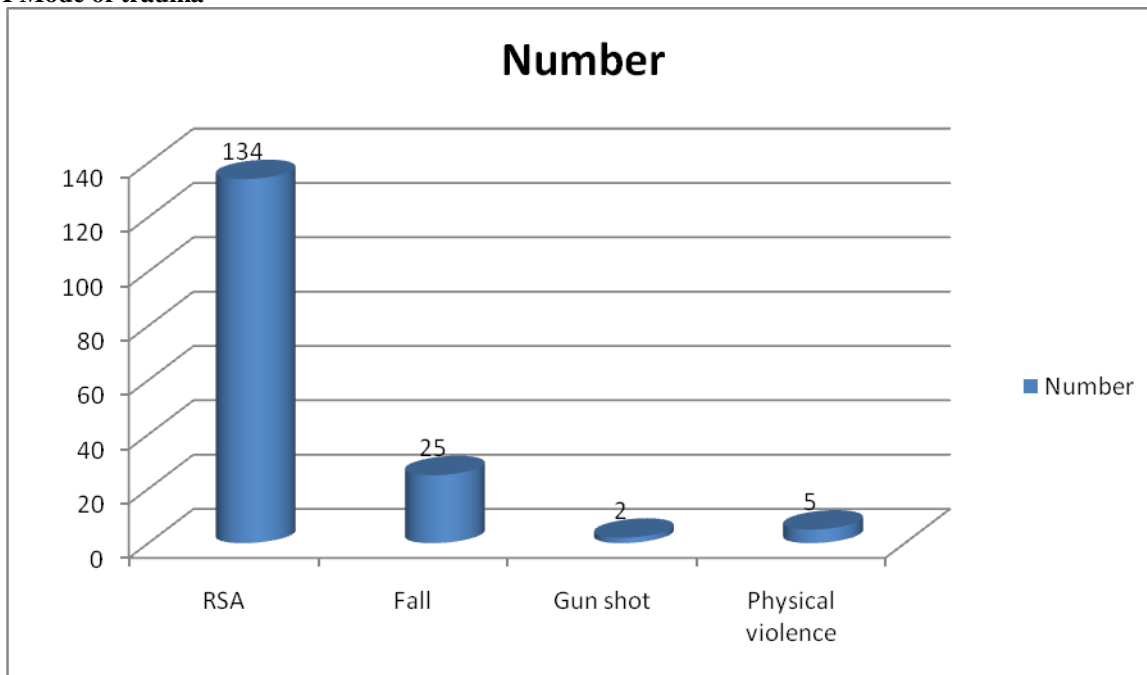
Table I shows that out of 146 patients, males were 82 and females were 84.

**Table II Type of trauma**

Type	Number	P value
Blunt	112	0.01
Penetrating	54	

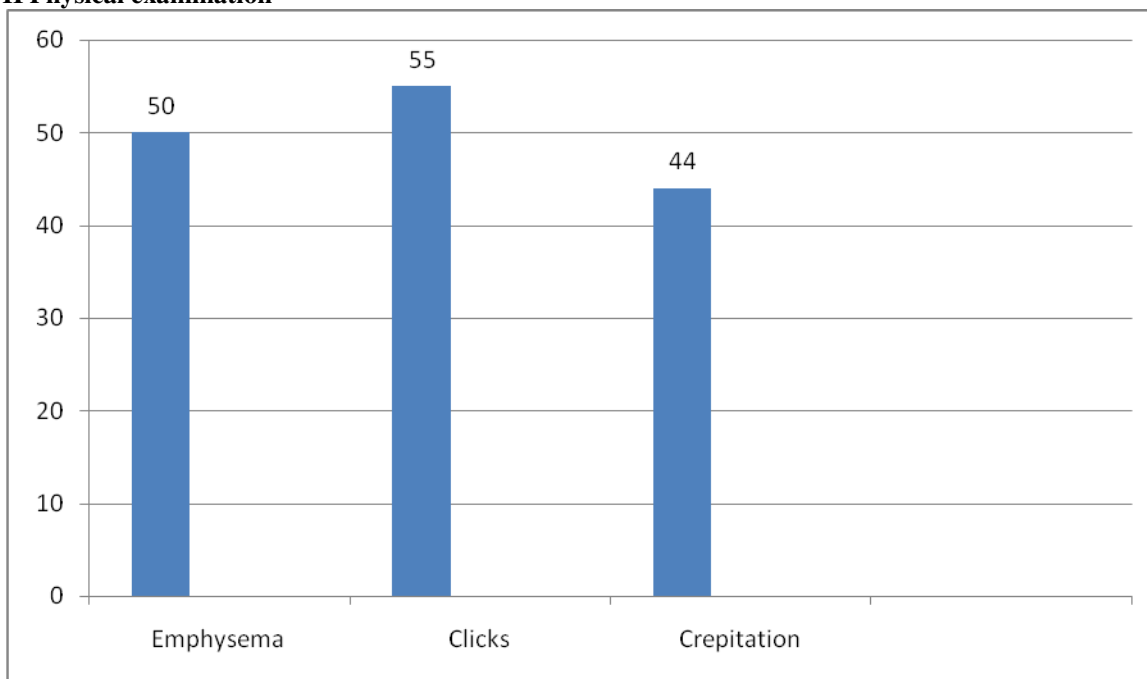
Table II shows that 112 cases were of blunt trauma and 54 were of penetrating. The difference was significant (p< 0.05).

**Graph I Mode of trauma**



Graph I shows that mode of trauma was road side accident in 134, fall in 25, gun shot in 2 and physical violence in 5.

**Graph II Physical examination**



Graph II shows that emphysema was seen in 50, clicks in 55 and crepitation in 44.

**DISCUSSION**

Chest trauma is an important public health problem accounting for a substantial proportion of all trauma admissions and deaths. It directly account for 20–25% of deaths due to trauma.

Literature is full information on thoracic injuries, and a detailed search is suggestive of RTAs as the main cause of these injuries worldwide, more so in the developing world.[6-8] Our country accounts for as many as 6% of RTA burden of the world. In the present study also, vehicular accidents accounted for almost 62% of all thoracic injuries followed by assault (9.87%). This mechanism of injury is rarely reported in the western literature but is seen more often in developing countries. Physical examination is adequate for the diagnosis of rib fractures in almost all conscious patients and useful in the diagnosis of other conditions like hemopneumothorax, pneumothorax, tension pneumothorax, surgical emphysema, flail chest, cardiac tamponade etc.<sup>5</sup> The present study was conducted to assess the cases of chest trauma.

In this study, out of 166 patients, males were 82 and females were 84. Naggar et al<sup>6</sup> studied 149 patients with chest trauma they were 121 males and 28 females (81.2% vs. 18.8%; male: female = 4:1). This male predominance may be explained by being more mobile, physically active and are more involved in outdoor activities like drivers, industrial workers, construction sites, other hazardous occupations, and laborers

Present study revealed that 112 cases were of blunt trauma and 54 were of penetrating injury. Sawyer et al<sup>7</sup> found that the commonly associated injuries with blunt chest trauma were orthopedic injury being the most common 34 patients (23.6%) followed by internal organ injury (19.4%), traumatic brain injury (18.1%), skull bone fracture (8.3%) and vertebral injury (1.4%). Skull bone fracture (8.3%), traumatic brain injury (18.1%) and vertebral injury (1.4%) were associated only with blunt trauma patients. About penetrating trauma internal organ injury (21.4%) is the most common associated injuries followed by diaphragmatic injury (10.7%) then orthopedic injury (7.1%). There was a high significant difference between blunt and penetrating trauma concerning diaphragmatic injury which was associated only with penetration trauma patients.

We found that mode of trauma was road side accident in 134, fall in 25, gun shot in 2 and physical violence in 5. We found that emphysema was seen in 50, clicks in 55 and crepitation in 44.

Pate et al<sup>8</sup> found that only 16 (8.8%) patients required surgery and rest 91.2% managed on conservative line only. Rib fracture was the commonest injury (60%) followed by hemopneumothorax (51.7%), surgical emphysema (37.9), lung contusion (10.4%), flail chest (6.2%) etc. Associated injuries were seen in 117 (48.8%), with head injury the commonest one. Overall mortality rate was 12%, which was higher in blunt chest trauma as compared to penetrating injuries.

Huber et al<sup>9</sup> studied poor outcome predictors after significant chest trauma in multiply injured patients found rib fractures in 11475 (51%) including (35% rib fractures 7794 patient, 16% Flail chest 3681 patient) in accordance with the present study 37(51.4%) patients with blunt chest trauma included (36.1% Multiple rib fracture, 12.5 % Flail chest, 2.8% Single rib fracture).  
etc.

Another study by Iyer et al<sup>10</sup> observed Mortality to be 36.0% of which 53.9% of deaths were unrelated to Chest Trauma (were as a consequence of Head Injury).13.5% of the cases died from complications of Chest Trauma and 11.2% died due to abdominal/pelvic injury. Chest trauma was responsible for 23.6% of deaths either directly or indirectly (complications or septicaemia).

Infective complications increase the length of stay as well as mortality from chest trauma, thus strict adherence to aseptic precautions and vigorous chest physiotherapy is essential.

### CONCLUSION

Authors found that maximum cases were of blunt trauma followed by penetrating trauma. Mode of trauma was road side accident, fall, gun shot and physical violence. Mortality from chest trauma can be significantly reduced by development of better trauma care systems, prevention of shock and hypoxia and adherence to strict aseptic precautions to prevent infective complications.

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