

MANAGEMENT OF TRAUMA PATIENTS IN AN EMERGENCY DEPARTMENT OF
IRAQI HOSPITAL

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ABSTRACT

Background: Emergency departments frequently work under conditions of limited diagnostic and therapeutic resources, including restricted access to advanced imaging modalities, shortages of blood products, and overcrowding. Standard trauma management protocols rely primarily on quick assessment, which is supported by radiological investigations and laboratory tests. However, in limited resources situations, doctors must frequently rely on clinical judgment and make judicious use of available investigations. **Objectives:** To assess the clinical presentation, management methods, and short-term results of trauma patients treated in an emergency department of Azadi Teaching Hospital. **Methods:** This a prospective observational study conducted in the emergency department of Azadi Teaching Hospital in Kirkuk during the period from March 2024 to December 2025. The study included 100 consecutive trauma patients and excluded patients who dead on arrival, patients transferred after definitive treatment elsewhere and those with minor injuries not requiring medical intervention. **Results:** The study included 100 trauma patients. The mean age was 31.4 ± 12.6 years (ranging from 16 to 68 years). Males formed 76% of the patients, while females accounting for 24% with male: female ratio of 3.16:1. Moreover, 45% of the study patients had road traffic accidents, 22% of the study patients had fall from height, 18% had assault related injury, 10% had occupational injuries, 3% had burn and 2% had animal related injury. It's evident that 62% of the study patients arrived within 2 hours, to less extent 28% arrived in between 2-6 hours and only 10% had delayed presentation. Furthermore, 81% of the study patients had blunted trauma while only 19% had penetrating trauma. The majority of patients had head and neck trauma (34%), followed by extremities injury (29%), chest in (18%), abdomen in (14%) and multiple injuries in (5%). Additionally, (64%) patients managed conservatively, while (12%) patients did laparotomy, (14%) patients did fixed fracture and (10%) patients did chest tube insertion. Most of patients (72%) were recovered without complications, (6%) patients admitted to intensive care unit, (18%) developed complications and (4%) were dead. Mortality was mainly associated with severe head injury (2 patients) and polytrauma (2 patients). **Conclusion:** Trauma primarily affects young adult males, with road traffic accidents being the major cause of injury and blunt trauma, particularly head and neck injuries being the most common pattern. The majority of patients were treated conservatively and had favorable outcomes, with severe brain injuries and polytrauma being the most common causes of death. These findings underscore the persistent cost of preventable trauma among economically productive age groups, emphasizing the significance of early emergency response and timely care.

KEYWORDS: Emergency, Injury, Outcomes, Road traffic accident.

1-INTRODUCTION

Emergency departments (EDs) frequently work under conditions of limited diagnostic and therapeutic resources, including restricted access to advanced imaging modalities, shortages of blood products, and

overcrowding.^[1-2] Trauma continues to be one of the leading causes of morbidity and mortality worldwide, especially in low- and middle-income countries where healthcare systems face significant constraints in infrastructure, equipment, and trained personnel.^[3] In

Iraq, the burden of trauma is exacerbated by interpersonal violence, occupational injuries, and traffic accidents.^[4]

Standard trauma management protocols rely primarily on quick assessment, which is supported by radiological investigations and laboratory tests.^[5] However, in limited resources situations, doctors must frequently rely on clinical judgment and make judicious use of available investigations. This can result in delayed detection of internal injuries and lead to less desirable outcomes.^[6] Despite these challenges, there is little published information about the characteristics, management techniques, and outcomes of trauma patients treated in Iraqi emergency departments with minimal resources. Understanding local patterns of injury and management outcomes is critical for creating context-appropriate trauma protocols and enhancing patient care. This study aimed to assess the clinical presentation, management methods, and short-term results of trauma patients treated in an emergency department of Azadi Teaching Hospital.

2-PATIENTS AND METHODS

This a prospective observational study conducted in the emergency department of Azadi Teaching Hospital in Kirkuk during the period from March 2024 to December 2025. The study included 100 consecutive trauma patients and excluded patients who dead on arrival, patients transferred after definitive treatment elsewhere and those with minor injuries not requiring medical intervention.

Data on these patients who admitted to emergency department are entered demographic and clinical data, including (age, sex, occupation, chief complaint, with it is duration, medical history, drug history).

A standardized data collection form was used to collect information such as demographic characteristics, mechanism of injury, time from injury to hospital presentation, vital signs at admission, type of diagnostic investigations performed, management approach, need for hospital admission, and clinical outcome at discharge.

Plain radiography, focused abdominal ultrasonography, and basic laboratory investigations were the only available diagnostic resources. CT scanning was not always available and was only conducted to specific cases.

Data were examined via descriptive statistics. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages.

3- RESULTS

The study included 100 trauma patients. The mean age was 31.4 ± 12.6 years (ranging from 16 to 68 years). Males formed 76% of the patients, while females accounting for 24%. With male: female ratio of 3.16:1.

Figure 1 shows that 45% of the study patients had road traffic accidents, 22% of the study patients had fall from height, 18% had assault related injury, 10% had occupational injuries, 3% had burn and 2% had animal related injury.

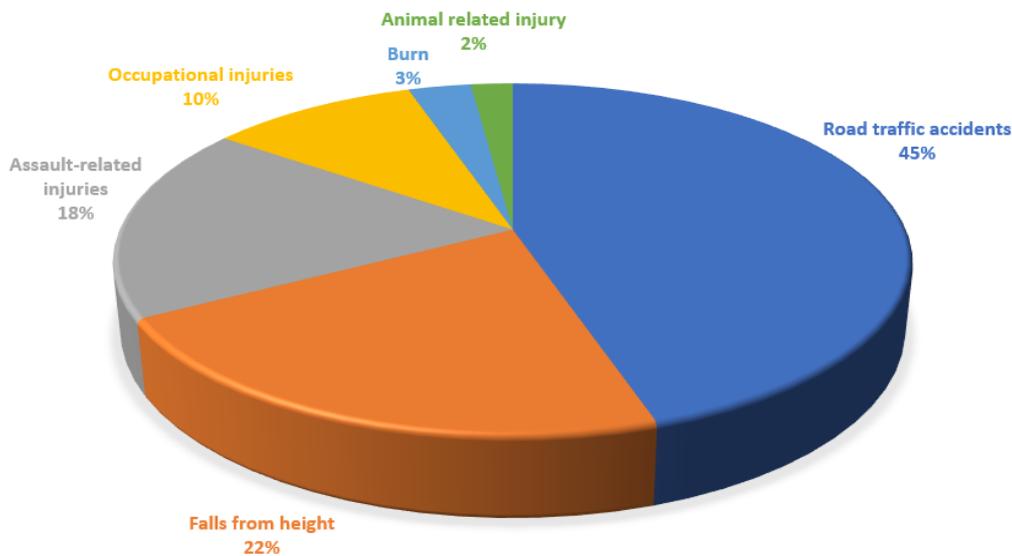


Figure 1: Patients mechanism of injury.

Figure 2 shows distribution of the study patients according to their time of emergency department arrival. It's evident that 62% of the study patients arrived within

2 hours, to less extent 28% arrived in between 2-6 hours and only 10% had delayed presentation.

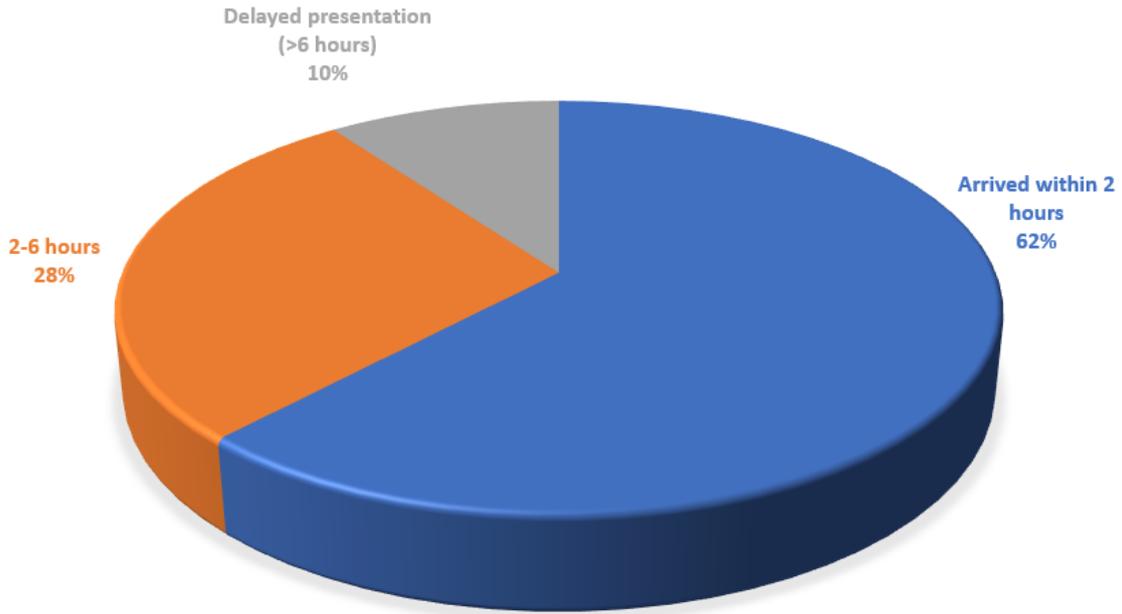


Figure 2: Distribution of the study patients according to their time of arrival.

Figure 3 shows that 81% of the study patients had blunted trauma while only 19% had penetrating trauma.

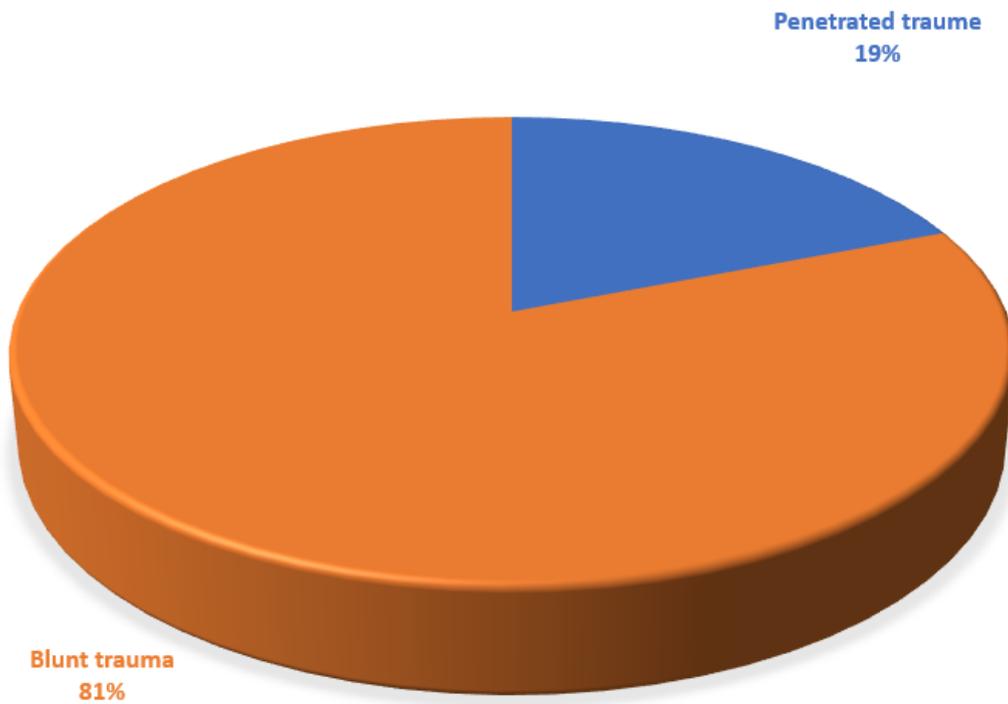


Figure 3: Distribution of the study patients according to their type of trauma.

Figure 4 shows distribution of the study patients according to their site of trauma. The majority of patients had head and neck trauma (34%), followed by

extremities injury (29%), chest in (18%), abdomen in (14%) and multiple injuries in (5%).

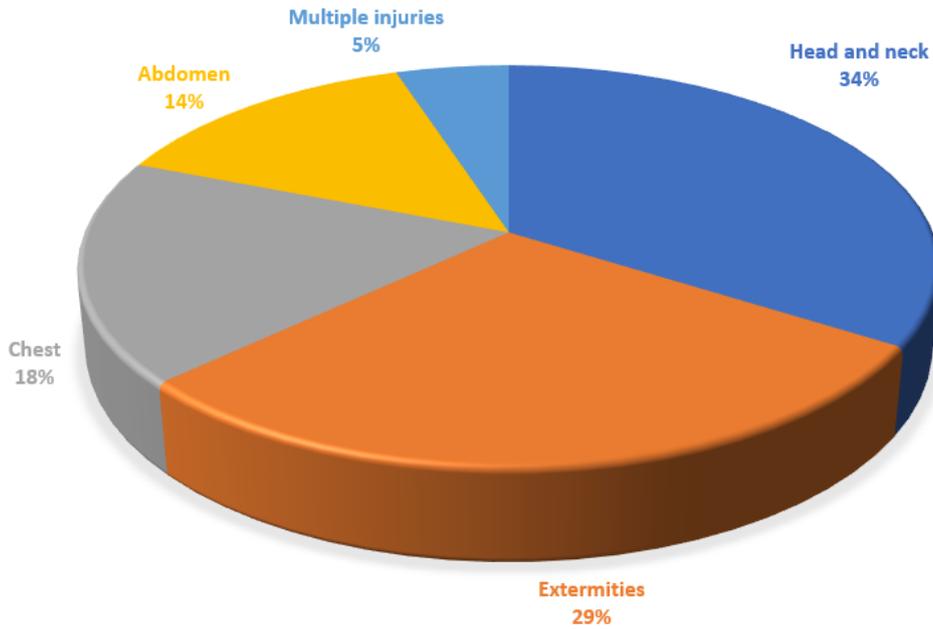


Figure 4: Distribution of the study patients according to their type of trauma.

Table 1 shows numbers and percents of each investigations used. The majority of patients did plain x-ray (78%), followed by FAST in (32%) and CT-scan in (12%).

Table 1: Investigations used.

Investigation Use	Number	Percent
FAST	32	32%
Plain x-ray	78	78%
CT scan	12	12%

Table 2 shows used treatment. The majority of patients (64%) patients managed conservatively, while (12%) patients did laparotomy, (14%) patients did fixed fracture and (10%) patients did chest tube insertion.

Table 2: Treatment used.

Treatment Options	Number	Percent
Conservative	64	64%
Surgical intervention:	36	36%
- Laparotomy	12	12%
- Fracture fixation	14	14%
- Chest tube insertion	10	10%

Figure 5 shows that (46%) were admitted to hospital wards, (46%) discharged from hospital after stabilization, (7%) referred to other centers and (6%) patients were admitted to intensive care unit.

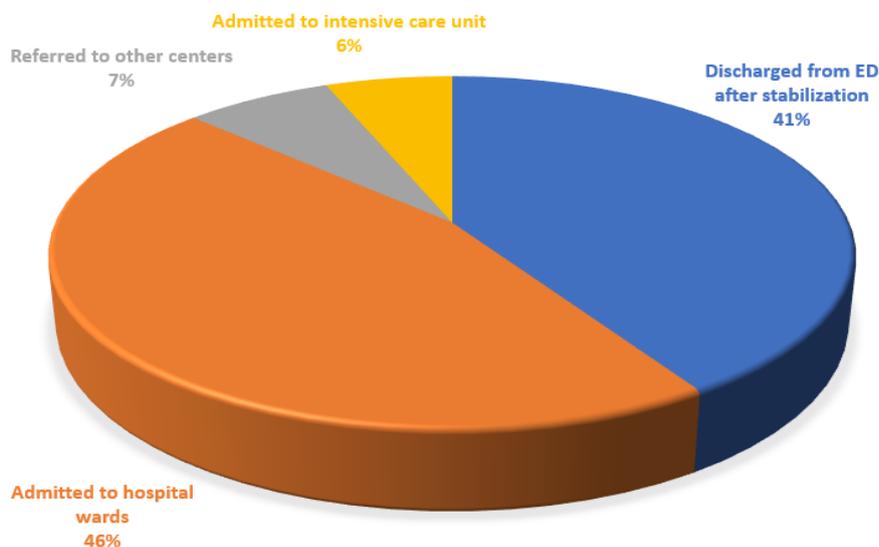


Figure 6: Distribution of the study patients according to their hospital disposition.

Figure 6 shows that the majority of patients (72%) were recovered without complications, (6%) patients admitted to intensive care unit, (18%) developed complications

and (4%) were dead. Mortality was mainly associated with severe head injury (2 patients) and polytrauma (2 patients).

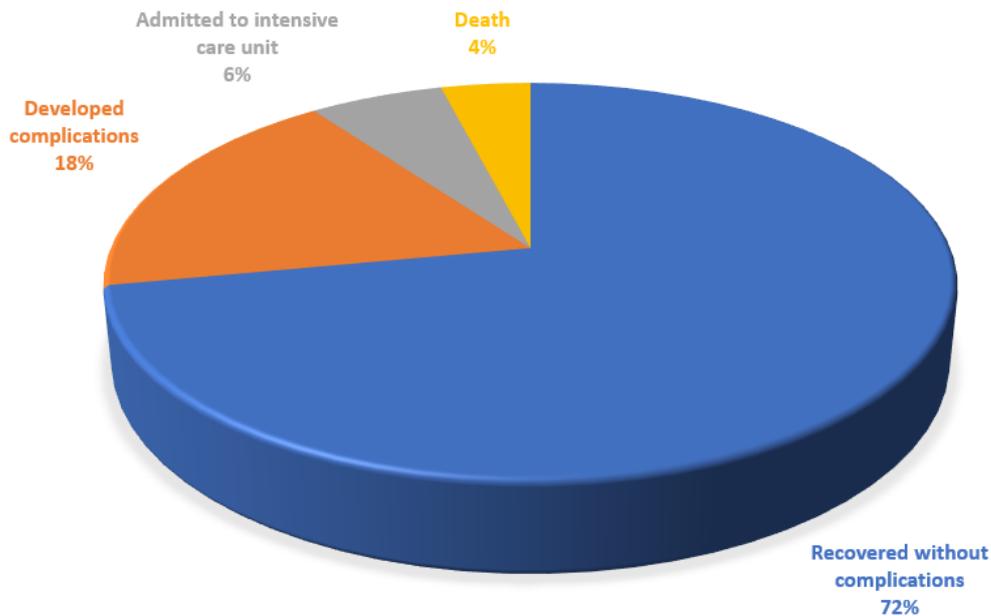


Figure 6: Distribution of the study patients according to their outcomes.

4. DISCUSSION

This study reviewed the epidemiological profile, injury patterns, management modalities, and outcomes of trauma patients who presented to the emergency department. The average age of 31.4 years, with a strong male predominance (76%), matches the typical demographic distribution of trauma victims in developing countries, where young adult males are more commonly exposed to high-risk activities and occupational risks. Similar demographic tendencies have been frequently found in recent trauma epidemiology studies, with young males being the most wounded group globally.^[7-8]

Road traffic accidents were the most common cause of injury (45%), followed by falls from heights and assault trauma. This finding is consistent with worldwide and regional data, which show that RTAs remain the leading cause of trauma-related morbidity and mortality, particularly in low- and middle-income countries. According to the World Health Organization's most recent reports, road traffic injuries remain a substantial public health burden, disproportionately affecting economically active age groups.⁽⁹⁾ Comparable hospital-based study has similarly revealed RTAs as the primary mode of injury, followed by falls and interpersonal violence.^[10]

The majority of patients (62%) came within two hours of their accident, indicating rather quick access to emergency care. The "golden hour" concept in trauma management emphasizes the importance of early

presentation as a key factor in trauma survival.^[11] Early resuscitation and intervention have been demonstrated to drastically lower mortality and complication rates in trauma groups.^[12] However, delayed presentations in 10% of patients show potential prehospital system limitation that require additional strengthening.

Blunt trauma accounted for 81% of cases, considerably higher than penetrating injuries. This distribution is consistent with international trauma registries, which show that blunt mechanisms, mainly from RTAs and falls, are the most common injury type in civilian populations.^[13] The most common anatomical site for injuries was the head and neck (34%), followed by limbs and chest trauma. The prevalence of head injury is clinically noteworthy, as traumatic brain injury is still the primary cause of trauma-related mortality and long-term impairment globally. Recent study indicates that head trauma is highly associated with poor outcomes, particularly when combined with polytrauma.^[14]

The majority of patients (64%) were treated conservatively, while 36% required surgical intervention, which included laparotomy, fracture repair, and chest tube insertion. This pattern is similar with previous study, which found that the majority of trauma patients may be handled non-operatively with appropriate monitoring and supportive treatment, with surgery reserved for instances with clear reasons such as internal bleeding, organ injury, or unstable fractures.^[15]

Outcome analysis revealed that 72% of patients recovered without issues, 18% developed complications, and the overall death rate was 4%. Mortality was predominantly related with severe head damage and polytrauma, which is consistent with previous studies indicating that traumatic brain injury and multiple system trauma are the strongest predictors of death in trauma patients.^[13,16]

Overall, the study's findings are consistent with current regional and international trauma data, highlighting the ongoing cost of road traffic accidents, the prevalence of blunt trauma, and the crucial significance of early emergency care in improving outcomes.

This study has a number of limitations. First, study was carried out at a single center with a small sample size, which may limit the findings' generalizability to different trauma settings. Second, the observational approach restricts the ability to demonstrate causal links between injury patterns, management strategies, and results. Third, injury severity grading systems (such as ISS or GCS-based stratified mortality analysis) were not fully used, which may have impacted the precision of outcome comparisons. Furthermore, long-term follow-up after discharge was not investigated, preventing the assessment of functional recovery and late problems.

5- CONCLUSION

According to this study, trauma primarily affects young adult males, with road traffic accidents being the major cause of injury and blunt trauma, particularly head and neck injuries being the most common pattern. The majority of patients were treated conservatively and had favorable outcomes, with severe brain injuries and polytrauma being the most common causes of death. These findings underscore the persistent cost of preventable trauma among economically productive age groups, emphasizing the significance of early emergency response and timely care. To improve trauma management and lower morbidity and mortality, it is proposed that road safety legislation be strengthened, prehospital care services be improved, access to advanced diagnostic imaging be expanded, and standardized trauma registries be implemented.

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Conflict of interest

About this study, the authors disclose no conflicts of interest.

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