

A PROSPECTIVE OBSERVATIVE STUDY OF MANAGEMENT OF BLUNT ABDOMINAL TRAUMA IN EMERGENCY DEPARTMENT

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Introduction

Blunt abdominal trauma results from a forceful impact to the abdomen without skin penetration, potentially injuring internal organs like the liver, spleen, and kidneys. If not quickly identified and treated, it can cause severe complications and even be fatal. This thesis investigates the occurrence and underlying causes of blunt abdominal trauma, highlighting associated risk factors, types of injuries, complications, and management difficulties. It outlines the ATLS protocol, starting with an initial assessment that addresses airway, breathing, circulation, disability, exposure, and environmental control, followed by a secondary survey to identify concealed injuries. This study also emphasizes the importance of gathering a comprehensive injury history, conducting physical examinations, and utilizing diagnostic tools like FAST and CT scans to identify organ damage and internal bleeding. Blunt abdominal trauma management involves continuous monitoring of vital signs and considering blood transfusions based on patient status. Early consultation with surgeons is essential for significant injuries, and surgery may be indicated for hemodynamic instability, positive FAST, peritonitis, or penetrating injuries. Surgical interventions include exploratory laparotomy, damage control surgery, and organ-specific procedures like liver packing, splenectomy, bowel resection, and pancreatic drainage. Postoperative care involves ICU monitoring for complications, while stable patients may be managed non-surgically with exams and imaging. Accurate documentation ensures effective communication, and recovery includes hospitalization, rehab, and psychological support. Prevention strategies emphasize seatbelt use, fall prevention, protective gear, and workplace safety.

Aim of the work

The aim of this study is to register management of blunt abdominal trauma in adult patients presenting to the Emergency Department in AMUH including causes, clinical signs, labs, imaging and treatment whether surgical or conservative.

Patients and Methods

This prospective observational study included 80 patients admitted to the Emergency Department of Alexandria Main University Hospital from December 1, 2022, to the end of December 2023, following the inclusion criteria. The sample size was determined with the assistance of the biostatistics department at the High Institute of Public Health. Inclusion criteria required participants to be adults aged 18 years or older. Exclusion criteria included patients with penetrating abdominal injury, patients in cardiac arrest, pregnant women and those under 18 years old.

This study involved a thorough assessment of all selected patients by a researcher, with their management carried out by the emergency medicine resident responsible for their care. Ethical approval was granted from Alexandria University Ethical Committee (Reference number 0107400). The study involved a comprehensive assessment of selected patients, encompassing the following steps:

- Detailed history taking included sex and past medical history for all selected patients with blunt abdominal trauma.
- Primary survey upon admission to identify immediate life-threatening issues, in which vital signs were thoroughly assessed including airway patency, clarity, and security; respiratory rate; oxygen saturation; circulation through blood pressure and heart rate measurements; body temperature, capillary refill time, pupil reaction and the Glasgow Coma Scale. Additional tests included random blood sugar. The patients were categorized into two groups based on hemodynamic stability.
- Secondary survey involved a thorough head-to-toe examination focusing on abdominal assessment, laboratory biomarkers including arterial blood gases (ABG), a complete blood count, coagulation profile, serum creatinine and blood urea levels, and diagnostic imaging such as FAST and CT scans for those with clinical indications.

The study compared FAST results in stable patients with CT scan and operative findings in unstable patients to assess diagnostic accuracy.

Results

In this study, road traffic accidents (RTA) were the most prevalent cause of injury among the studied patients, affecting 46 individuals (57.5%). This was followed by direct trauma, which impacted 14 patients (17.5%). Falls from height (FFH) accounted for 9 patients (11.3%), while alleged assaults were the least common, affecting 11 patients (13.8%). The study shows that the majority of patients (67.5%) underwent emergency laparotomy, while 30% were managed conservatively. Only a small number (2.5%) transitioned from conservative to operative management.

Table (I): Distribution of the studied cases according to different parameters

| | No. | % |
|-----------------------------|-----|------|
| Mode of trauma | | |
| RTA | 46 | 57.5 |
| FFH | 9 | 11.3 |
| Alleged assault | 11 | 13.8 |
| Direct trauma | 14 | 17.5 |
| Treatment received | | |
| Emergency laparotomy | 54 | 67.5 |
| Conservative | 24 | 30.0 |
| Conservative then operative | 2 | 2.5 |

Table (2): Relation between patient outcome with FAST findings (n = 80)

| | Outcome | | | | FET | P |
|---------------------------------|---------------------|------|---------------|------|---------|---------|
| | Discharged (n = 58) | | Died (n = 22) | | | |
| | No. | % | No. | % | | |
| FAST | | | | | | |
| Negative | 19 | 32.8 | 0 | 0.0 | 9.452* | 0.002* |
| Positive RUQ collection | 11 | 19.0 | 2 | 9.1 | 1.143 | 0.498 |
| Positive LUQ collection | 9 | 15.5 | 0 | 0.0 | 3.847 | 0.057 |
| Positive subxiphoid collection | 1 | 1.7 | 0 | 0.0 | 0.384 | 1.000 |
| Positive pelvic collection | 5 | 8.6 | 0 | 0.0 | 2.023 | 0.315 |
| Positive in more than one space | 9 | 15.5 | 13 | 59.1 | 15.189* | <0.001* |
| Positive in all spaces | 4 | 6.9 | 7 | 31.8 | 8.353* | 0.008* |

Conclusion

This prospective observational study offers valuable insights into the management of blunt abdominal trauma at Alexandria Main University Hospital's Emergency Department. The study confirms the utility of the Advanced Trauma Life Support (ATLS) approach in the initial assessment and stabilization of patients, emphasizing the importance of systematic evaluation through primary and secondary surveys. The findings underline the significant role of clinical history, physical examination, laboratory biomarkers, and diagnostic imaging—particularly FAST and abdominal CT scans—in guiding decision-making for both surgical and conservative management strategies.