



PROSPECTIVE STUDY OF CLINICAL PROFILE AND MANAGEMENT IN BLUNT TRAUMA ABDOMEN

General Surgery

Dr Neha Jyoti*	Junior Resident(academic) Department Of Surgery,Jlnmch Bhagalpur.*Corresponding Author
Dr C M Sinha	MS general surgery, associate professor,JLNMCH bhagalpur
Dr Vivek Kumar Madhur	MS orthopaedics, senior resident

ABSTRACT

Background: Blunt injury abdomen is the leading cause of morbidity and mortality in all age groups. BAT differs from penetrating trauma as different organs are characteristically injured by compression from blunt straining. The purpose of this study was to determine the incidence and significance of this finding and its management.

Methods: We conducted this prospective study of 48 patients admitted to our institute with history of Blunt Abdominal Trauma over 6 months. After a primary survey of these patients, brief history and complete physical assessment all the basic investigations were done. Plain xrays were taken routinely. Ultrasonogram (F.A.S.T SCAN) was done for all cases and a CT scan was done for selected cases. Radiologic interpretation, clinical management, and operative findings were analyzed.

Results: 36% of the cases were in the third decade of their lives. Males:female ratio is 1:0.19 and most cases were between the age group of 11-40 years (74%). Road traffic accident was the most common mode of injury accounting for 70% cases. Spleen was the most common injured organ accounting for 54% of the cases. 71%(34 cases) underwent exploratory laparotomy. 29%(14 cases) were observed, of whom two failed nonoperative management and underwent therapeutic laparotomies within 24 hours of admission for missed colon, splenic, and hepatic injuries. So in total 36 laprotomies common surgeries performed included splenectomy (9 cases), primary closure of perforation (8 cases) and resection and anastomosis (8 cases). Most patients (82% i.e. 39 cases) were discharged in 12 to 14 days of admission.

Conclusion : incidence mostly in 3rd decade due to RTA are more prone to BAT. Solid organs like spleen and liver were more commonly injured in blunt injury to abdomen than the other organs like mesentery, retroperitoneum, bladder. Early laparotomy is recommended for these patients

KEYWORDS

INTRODUCTION

Injury has been man's constant companion since ancient times. Modern trauma care has been increasing in sophistication all the time. The abdomen¹ account for 75-80% of blunt trauma of abdomen. Blunt trauma can result from either compression (secondary to a direct blow or against a fixed external object) or from² deceleration forces. Abdomen is the third most common organ injured following extremities and head injury. CT³ scanning has increased the identification of injuries.

Evaluating patients who have sustained blunt abdominal trauma remains one of the most challenging and intensive aspects of acute⁴ trauma care. Missed intra-abdominal injuries and concealed hemorrhage are frequent causes of increased morbidity and mortality, especially in patients who survive the initial phase of an injury. Physical examination findings are sometimes unreliable for several reasons; including the presence of distracting injuries, associated chest injuries, an altered mental state, and co-existing⁵ drug and alcohol intoxication in the patient. In view of increasing number of vehicles, the consequent increase in high-velocity road traffic accidents, rampant increase in construction work, this study chosen to study blunt abdominal trauma, its frequency, different modalities of management and treatment outcomes.⁷ The trauma can be either from road traffic accidents, assault, accidental fall from a height, sports injury or fall of a heavy object.

Management of blunt abdominal trauma has undergone significant change over the past two decades, evolving from a primary operative scheme to more nonoperative management. The workup has shifted largely from the use of physical examination, plain x-ray, laboratory findings, and DPL to the extensive use of CT and ultrasonography. Treatment for visceral injury has traditionally been surgical, but many forms of solid-organ injury can now be managed nonoperatively or with minimally invasive and interventional radiology techniques. Management of the multiple injured trauma patient at level I trauma centers with state-of-the-art techniques has now conclusively shown significantly improved patient outcomes and survival.^{7 a}

METHODS

The study was conducted in JLNMC Bhagalpur for a period of 6 months (August 2019- Jan 2020). The study comprises of 48 patients

who sustained blunt abdominal trauma who were admitted and managed in our hospital. All the cases were registered as medico-legal cases.

Inclusion criteria

- Patients presenting with a history of recent assault by the blunt/heavy object over the abdomen,
- Road traffic accident with suspected blunt abdominal injury
- History of accidental fall from height
- History of fall of the heavy object over the abdomen.
- Blunt trauma abdomen in sports injury

Exclusion criteria

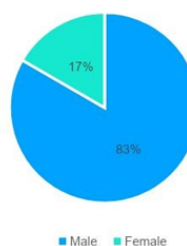
- Patients with penetrating/stab/gunshot injuries
- Patients of the pediatric age group

After a primary survey of these patients, clinical history and complete physical examination with all the basic investigations were done. Plain xrays were taken routinely. Ultrasonogram (F.A.S.T scan) was done for all cases and a CT scan was done for selected cases. Based on the clinical finding and investigations, cases were managed. At laparotomy, a systematic approach with an examination of all intraabdominal organs was made. In post operative patients were NPO and managed with continuous vitals monitoring, Nasogastric tube, IV fluids, and antibiotics.

RESULTS

In 48 patients with BTA there were 40 male(83%) and 8 female(17%) with M:F ratio 1:0.19 (**figure1**)

Gender Distribution



The highest age incidence for abdominal injury was for age group 11 to 40 years which constitutes 35cases (74%)of the study population.Figure2

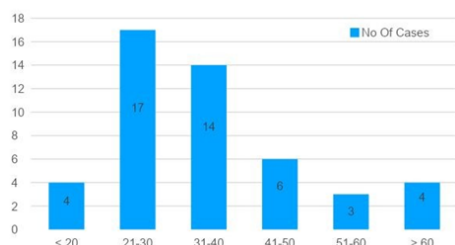


Figure 2: age incidence

Comparing the different modes of injury, the most common mode of injury was road traffic accidents (70%) followed by assault (20%) which accounted for 90% of total injuries.(table1)

Table 1: Mode of injury

Mode of injury no	Number cases	%
Road traffic accident	33	70
Assault cases	9	20
Fall from height	5	9
Fall of heavy weight	1	1

88% of our patients presented with abdominal pain followed by abdominal guarding and Rigidity in 72%(table2). Least patients presented with hematuria accounting for 4% patients. The study of the associated injuries showed that they were present along with abdominal injury in 33 cases(table 3). The common extra abdominal injury was thoracic in the form of fractured ribs and hemothorax followed by head injury, extremities fracture and pelvic injury .

Table 2. Clinical presentation of the studies cases

Presenatatin	Percentage of cases
Abdominal pain	88
abdominal distension	54
Abdominal guarding and rigidity	74
Shock	32
Haematuria	4

Table 3. Associated injuries in the associated cases

Associated injuries	Percentage of cases
Head	10
Chest	22
Extremities	8
Pelvis	8
No associated injuries	54

Plain X-ray of erect abdomen was done in all the cases out of which 8 (16%) patients showed gas under diaphragm s/o perforation. Rest of the 42 (84%) X-rays were normal(figure 3). Ultrasound of the abdomen was done in all the cases. Spleen was found to be most commonly injured organ (38%)

XRAY Erect Abdomen

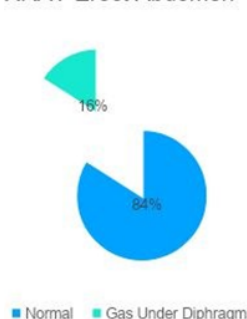


Figure3

Among the organs injured most commonly encountered one was Spleen (52%) followed by liver (14%). 12% of cases had multiple abdominal injuries. There were also 6 cases of ileal perforation (12%).

34 (71%) of the patients underwent emergency laparotomy because of

pneumoperitoneum or hemodynamic instability. 14 (29%) patients were managed non-operatively because they had no signs of peritonitis and they were haemodynamically stable but 2 in them had undergone for laprotomy. During laparotomy the most common operative procedure which was done was splenectomy (9/36) followed by primary closure of perforation (8/36), resection and anastomosis (8/36). Procedures like mesenteric tear suturing, hepatorrhaphy and cholecystectomy was done in 5, 3 and 3 patients out of 36 operated patients (figure-6).

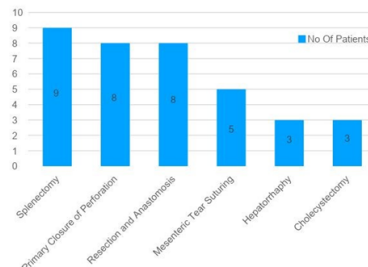


Figure 6

Majority of the patients (78%) were discharged within 10 days of admission. 11 (22%) needed to be in hospital beyond 10 days and were discharged before 20 days of admission. There was no patient who had to remain in hospital beyond the period of 20 days.

Table-4: Hospital Stay in the studied cases

Number of hospital	days in Number of cases	%cases
1-10 days	37	78
10-20 days	11	22

DISCUSSION

The grievously injured victims require prompt enlightened care to avoid catastrophic end results. Deaths are occurring every day, in many different settings, from injuries to the upper abdomen and lower rib cage that produce damage to the liver, spleen, and pancreas. The location and severity of the blow and the position of the victim when injured determine which combination of organs is affected. These are life-threatening injuries.

The stakes are high for the patient, and the demands on the surgical team are great. It is necessary that the early recognition and effective management of these injurious are essential for the survival and prevention of far-reaching complications. Similar findings were reported by Nikhil Mehta et al in their retrospective study of 71 cases of BAT the authors found that the common associated injuries were head injuries (14%), hemothorax (14%) and rib fractures (20%). The authors managed most of the associated injuries conservatively except hemothorax and pneumothorax where intercostals drainage was needed¹⁷ Plain X-ray abdomen erect posture was done in all 48 cases. Gas under diaphragm was seen in 9 cases out of 10 bowel perforation detected at laparotomy. So 89 % is the sensitivity but use abdomen should be done if no gas seen on X-ray. USG abdomen was done in all cases out of which 37 cases shows organ injury. Therefore USG abdomen is more reliable in detecting organ injury and free fluid in the abdomen. In our study USG could show Splenic, Hepatic and renal injuries in 38%, 30% and 06% patients respectively. Spleen was found to be injured most commonly.

In our study grade III splenic injuries were encountered in the majority (20 cases). 12 cases involved laceration of parenchyma >3cm depth and 8 cases were a subcapsular hematoma (>50%). All cases were taken up for laparotomy ending in splenectomy. 2 cases of grade II injury were encountered (laceration<3cm) were taken for laparotomy resulting in splenectomy. 3 cases of grade-IV type were seen with hilar vessel laceration and 1 case of grade-5 injury with shattered spleen were met with. All these cases with severe injuries were managed by splenectomy. We encountered 7 cases of liver injury of which Grade II injuries constituted the majority (5 cases) followed by grade III injuries (2 cases). All grade II injuries involving either a small subcapsular hematoma (3) or capsular tear with laceration <1cm depth in the parenchyma (1) were managed conservatively and patients did well. Both the cases of grade-III injury, were managed conservatively.

Ileal perforation was a total of 6 cases (12%). About 5 of the cases the defect was large involving more than two-thirds of the wall and one was associated with mesenteric tear and hence resection of the segment with primary anastomosis was done by 2 layer method. Jejunal perforation constituted about 4 cases (4%) and three cases the defect being large underwent Resection and anastomosis using two-layered closure and one case proceeded with primary suturing.

Solid organs are injured by a direct violence or deceleration injury because of protected position and¹³ lacerations and capsular tears which are difficult to diagnose clinically can be easily demonstrated in USG and CECT scan and were selected for non-operative management. However, the disadvantage of non-operative management is missed injuries resulting in¹⁵ increased morbidity and mortality. Operative intervention is needed in hemodynamically unstable patients who are not responding to aggressive fluid¹⁹ resuscitation. Hospitals. injury and hence they play a major role in decreasing the mortality by initial resuscitation and by reducing the time ligament attachments.¹² is usually by direct trauma. Both cases of pancreatic trauma required no surgery. Two cases of renal injury were seen. One case was a grade-I injury with a non-expanding subcapsular hematoma. The second one was a Grade 3 injury. Both the cases were managed conservatively. There was no associated intra-abdominal injury or urethral injury. Three cases of mesenteric injury with associated small bowel injuries were encountered. In one case primary suturing using 2-0 vicryl was done. In two cases we proceeded with resection and anastomosis for the associated small bowel injury. There was a case of urethral injury. There was urinary extravasation in perineum and blood at urethral meatus. AUG (antegrade urethrogram) was done and found to be an anterior urethral injury. Urinary diversion done by suprapubic cystostomy.¹⁴

CONCLUSION

Abdominal Trauma is one of the important causes of morbidity and mortality in relatively young individuals. Most common mode of injury is road traffic accidents. Early diagnosis of the extent of injury by appropriate imaging (X-ray, Ultrasound or CT abdomen) and appropriate interventions, aggressive fluid resuscitation, blood transfusion, and operative interventions are crucial in management. Associated injuries like head injury, abdomino-thoracic injuries and fractures influence the outcome. Hemodynamically stable patients with suspected blunt injury abdomen should undergo routine CT scanning preferably contrast-enhanced because of its high sensitivity and specificity.

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