

# Blunt Trauma Abdomen: Pattern of Abdominal Visceral injuries in children at Sheikh Zayed Medical College, Rahim Yar Khan

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## ABSTRACT

**Aim:** To see the pattern of abdominal visceral injuries on exploration in blunt trauma patients and their outcome in terms of mortality and morbidity.

**Place of study:** Department of Paediatric Surgery, Sh. Zayed Medical College/Hospital, Rahim Yar Khan

**Duration:** January 2012 to December 2012.

**Methods:** 50 patients with blunt trauma abdomen were included. All the patients under 12 years of age with blunt trauma abdomen having associated injuries were included in this study. After all routine investigations X-ray abdomen and chest, focused abdominal sonography for trauma (FAST) and additional investigations were done in special situations. 2 patients were expired: one peroperatively and other before the surgery. 25 patients underwent surgical intervention for suspected intra-abdominal injuries, rest of 23 patients were managed conservatively. Age ranged from 0-12 years. 70% of the injuries were due to RTA, 30% injuries were low velocity injury.

**Conclusion:** The early presentation of the patients and early intervention has the better outcome than delayed presentation.

**Keywords:** Blunt abdomen trauma, visceral injury, FAST

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## INTRODUCTION

In an age of speed, civil violence and traffic accidents, the incidence of blunt injuries to the abdomen has been on the increase. Although the mortality and morbidity from these injuries is gradually decreasing, abdominal visceral injuries still a great challenge for surgeons, especially in children not only due to hemorrhage and infection but also regarding early diagnosis.

Blunt trauma includes direct blows, crushing injuries, blast injuries and deceleration injuries. Any intra peritoneal organ can be injured without any visible evidence. The orthodox was that all penetrating injuries of the abdomen should be explored where as blunt injuries could be observed with careful monitoring as the incidence of bowel injuries was much lower. However many solid organ injuries may bleed significantly initially and then stop subsequently with no surgical intervention required. In our society motor bike, motor rikshaws, chingchi rikshaws remained the major cause of blunt trauma in at least 70% of patients. In these accidents most of these patients have poly trauma involving abdomen, limbs, head and neck which are difficult to evaluate resulting in high morbidity. Despite improved diagnostic modalities, intestinal injuries continue to be missed on initial evaluation and probably carries a

more lethal consequence than any other abdominal solid organ injury. Current trend is selective exploration of blunt trauma patients. Liver and spleen are the most commonly injured organs after blunt trauma abdomen.

## METHODS AND MATERIALS

This study was conducted in pediatric surgery department at Sheikh Zayed medical college/hospital, Rahim Yar Khan from January 2012 to December 2012. All the patients under 12 years of age with blunt trauma abdomen having associated injuries were included in this study. After all routine investigations like Complete Blood Count, Complete Urine Examination, X-ray abdomen and chest, focused abdominal sonography for trauma (FAST) and additional investigations were done in special situations like as follows: CT scan in cases with equivocal abdominal signs especially in patients with unexplained hypovolemia and suspected head injuries, IVP was done in suspected cases of renal injuries and cystourethrogram was done in urinary bladder and urethral injuries. Patients with any abdominal visceral injury and having retroperitoneal hematoma > 10\*10cm were included while patients who did not survive till the evaluation of visceral injury were excluded from the study.

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## RESULTS

We included 50 patients with blunt trauma abdomen during the study period. 2 patients were expired: one peroperatively and other before the surgery. 25 patients underwent surgical intervention for suspected intra-abdominal injuries, rest of 23 patients were managed conservatively. Age ranged from 0-12 years. 70% of the injuries were due to RTA, 30% injuries were low velocity injury (15% fall from height and remaining 15% with miscellaneous mechanism of injury).

No and percentage of organ injuries among explored patients

Injured organ	=n	%age
Liver	5	20
Spleen	5	20
Urinary bladder	5	20
Pelvic hematoma	3	12
Jejunum	2	8
Pancreas	2	8
Duodenum	1	4
Biliary tract	1	4
Kidney	1	4

No and Percentage of associated injuries

Organ injury	=n	%age
Haemopneumothorax	4	8
Femur	2	4
Sacrum	1	2
Urethra	3	6
Anal sphincter	1	2
Brain and spinal cord	2	4

Mortality

Time of death	=n	%age
Preoperatively	1	2
Preoperatively (Grade 5 liver injury)	1	2

Morbidity among operated patients

Morbidity	=n	%age
Minor wound infection	4	16
Burst abdomen	1	4
Prolonged hospital stay	1	4
Postoperative intraperitoneal collection	2	8

## DISCUSSION

While the primary survey of the abdomen usually detects signs of internal hemorrhage, secondary survey is also essential to pick up continuous bleed or further bleeding following the restoration of normal blood pressure<sup>10</sup>. In the patient having BTA physical signs of organ involvement are often lacking. If an unstable patient having multiple injuries and there is uncertainty whether the abdomen is source of shock,

a FAST may be useful. If a patient is stable and CT facility is available, head and abdominal CT scan can be obtained. Laparoscopy can also be proposed as useful adjunct in this situation<sup>11</sup>. Laparoscopy is a safe method for evaluation of selected patients with trauma, and can reduce the number of negative laparotomies performed. The most common reason for the injuries to be missed is altered level of consciousness due to head injury, severity of injury, lack of symptoms at the time of admission and low index of suspicion by the examiner<sup>13</sup>. Secondary trauma survey is not a definitive assessment and should be supplemented by tertiary trauma survey.

60-70% of the blunt abdominal injuries can be managed non-operatively. Most commonly injured intra-abdominal organs are liver and spleen because solid organs are more likely to be ruptured than hollow viscera. A hemodynamically unstable patient with liver or splenic injury should be subjected to laparotomy. Any patient selected for conservative management should be assessed and reassessed by an experienced clinician. Injuries to the portal triade are rare but usually fatal. Injuries to the duodenum may be associated with pancreatic damage. In our series one of our patients with duodenal injury also presented with transection of both hepatic ducts that was managed with Roux-en-Y portoenterostomy with only one episode of ascending cholangitis. Most cases of small bowel injuries were managed with primary repair. Large bowel injuries can be repaired primarily if presented within 06 hours and with defunctioning colostomy if presented after 06 hours. Kidney and urinary tract injuries are best diagnosed with enhanced CT scan. Intra-abdominal bladder tears can be repaired primarily. Intra-operative uncontrolled bleeding is primary cause of death and hemorrhage control should be the first priority.

FAST is a rapid diagnostic test that surveys for hemopericardium, right upper quadrant, left upper quadrant and pelvis for hemoperitonium in patients with potential injuries. Blood is most commonly found in Morrison's pouch in patients with liver and splenic injuries but not when injury to hollow viscus<sup>18</sup>. Children with blunt liver and splenic injuries can be successfully managed by a non-pediatric trauma surgeon<sup>18</sup>. In hemodynamically stable patients laparoscopy safely identifies small bowel injuries. Early recognition of these injuries and timely surgical management gives the best prognosis<sup>16,17</sup>.

In our study it was observed that solid organ injury is more common than the hollow visceral injury that was about 50% cases, which is according to international studies<sup>19</sup>. One study by Nance ML in 2000 in Philadelphia in which about 50% were liver injuries (~n=1400 out of 2977 patients)

## CONCLUSION

The most common violence in blunt trauma abdomen is motor bile and Quingqi injuries. Most of the cases were presented earlier, nature of injury was solid organ i.e., liver and spleen injuries and morbidity and mortality depends upon the severity of injuries. Early presentation of the patients and early intervention has the better outcome than delayed presentation.

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