



## ORIGINAL RESEARCH PAPER

### BLUNT TRAUMA ABDOMEN PRESENTATION, EVALUATION AND MANAGEMENT IN A TERTIARY CARE CENTRE OF HILLY REGION:A PROSPECTIVE STUDY

#### Surgery

**KEY WORDS:** Trauma, Blunt abdomen, Hilly region.

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#### ABSTRACT

**Introduction:** Blunt trauma abdomen is frequent in emergency department and has a significant morbidity and mortality despite of improvement in early diagnosis and treatment. According to a estimate by World Health Organization that, by the year 2020 trauma will be the first or second most leading cause of loss of years of productive life in worldwide population.

**Aim:** our study Aims at evaluation of 50 cases of Blunt Trauma Abdomen with emphasis on early diagnosis and management in a Tertiary Care Centre of Hilly Area.

**Material and Methods:** A total of 50 patients presenting in the emergency department of Dr. susheela Tiwari Government Medical college and Associated hospitals, Haldwani with blunt trauma abdomen were enrolled to this study. clinical examination and investigations were performed for all patients.

**Conclusion:** Early recognition, proper and timely utilisation of imaging modalities along with thorough clinical examination in patients with blunt trauma abdomen aims at significantly decreasing the morbidity and mortality.

#### INTRODUCTION

Approximately 85% of abdominal traumas are of blunt character.<sup>1</sup> and 25% of the cases of Blunt trauma abdomen require surgical intervention. Trauma is the most common cause of death under 45 years of age and leading cause of disability and death in developing countries.<sup>2</sup> the most commonly injured organs are The spleen and liver in blunt trauma abdomen cases. Clinical examination alone is inadequate in these patients as they may have other injuries and altered mental status. Immediate resuscitation in emergency department along with radiological investigations ie focused assessment with sonography in trauma (FAST) and contrast enhanced computed tomography scan (CECT) of abdomen are very helpful in detecting in patients with minimal or clinically undetectable signs of abdominal injury and has been included in recent management guidelines. Pre-hospital transportation, initial assessment, immediate resuscitative measures and diagnosis are of utmost importance in trauma management. Damage control surgery has proven to be life saving procedure for those 10% patients who have persistent hypovolemic shock as a result of continuous blood loss despite of aggressive fluid resuscitation and require an emergency laparotomy for controlling haemorrhage and sepsis. On the other hand, there has been increasing trend towards non operative management for blunt trauma abdomen in patients with hemodynamically stable solid organ injuries.

#### MATERIALS AND METHODS

A prospective study of 50 patients of blunt trauma abdomen presenting to the emergency department of Dr. susheela Tiwari Government Medical college and Associated hospitals, Haldwani from August 2014 to January 2016 was done. exclusion criteria was patients presenting with Penetrating abdominal trauma. Initial resuscitation, clinical history, physical examination, laboratory investigations and x-rays were done following which ultrasonography (FAST) was done to make a diagnosis. CECT whole abdomen was done in almost all of the patients, categorization of the patients was done into to stable and unstable variables like age, sex, cause of blunt trauma abdomen, time of presentation after injury, clinical features (symptoms and signs), operative findings, operative procedure done, associated injuries, postoperative complications and mortality were noted. The clinical progress of patients was closely monitored and decision was taken to either continue with conservative management or to undertake a surgical intervention. Patients who did not respond to conservative management and were hemodynamically unstable and deteriorated despite of adequate resuscitation or who had features suggestive of bowel involvement were taken for emergency laparotomy.

#### OBSERVATIONS AND RESULT

50 Blunt trauma abdomen patients presenting to the emergency department of Dr. susheela Tiwari Government Medical college and Associated hospitals, Haldwani from August 2014 to January 2016 were included in this study ; 40 (80%) were males and 10 (20%) females; mean age was 26 years. The predominant age group was 20-30 years constituting 40% of patients.

#### Clinical features

47 (94%) of the patients presented with pain abdomen followed by vomiting in 37(74%) patients. Dyspnea was present in 12(24%) patients and hematuria in 6(12%) patients. Clinical examination revealed generalized abdominal tenderness and guarding in 35 (70%) patients. 17 (34%) patients presented with hypovolemic shock.

#### Time of presentation

More than 50% of the (27) patients presented within 4 hours of the incident to our emergency deptt. however there was significant delay in transportation of patients due to difficult and hilly regions of kumaun region.

#### Morbidity and mortality

In our study Mortality was seen in 2 (4%) patients. Commonest cause was irreversible shock and cardiopulmonary arrest. Wound infection in 6 (12%) and wound dehiscence in 4(8%) were most frequently observed Post-operative complications in our study.

**Table A. Mode of trauma.**

Mode of blunt trauma abdomen	Number of patients	Percentage (%)
1. Motor vehicle accident	26	52%
2. Fall from height	22	44%
3. Physical assault	2	4%

Road traffic accidents accounted for 52% majority of injuries (Table A).

Fall from height accounted for 44% (22 patients) of cases because of difficult terrains and hilly region of kumaun region (Table A).

**Table B. Other Associated injuries.**

Associated injury	Number of patients	Percentage (%)
1. Fracture rib	9	18%
2. Head injury	8	16%
3. Hemothorax	6	12%

4. Fracture femur	5	10%
5. Fracture pelvis	5	10%
6. Pneumothorax	4	8%
7. Spinal fracture	3	6%

**Table C. Distribution of patients according to organ involved.**

Involved organ	Number of patients	Percentage (%)
1. Spleen	27	54%
2. Liver	18	36%
3. Retroperitoneal hematoma	11	22%
4. Small bowel	8	16%
5. Kidney	8	16%
6. Mesenteric tear	6	12%
7. Urinary Bladder	1	2%
8. Diaphragmatic injury	1	2%

**Table D. Performed surgical procedures.**

Surgical procedures	Number of patients	Percentage (%)
1. Splenectomy	17	34%
2. Primary repair of bowel	7	14%
3. Repair of mesenteric tear	5	10%
4. Resection anastomosis of bowel	2	4%
5. Repair of hepatic tear	1	2%
Diaphragmatic rupture repair	1	2%
7. Nephrectomy	1	2%
8. Urinary bladder repair	1	2%

## DISCUSSION

Blunt trauma abdomen is a difficult task even for the best of the specialists. single organ Injury ranging upto multi organ trauma may be produced by blunt trauma abdomen. 40% of the patients with hemoperitoneum may present with absent Abdominal findings. Unrecognized abdominal injury is a frequent cause of preventable death after trauma.<sup>3</sup> clinical evaluation of blunt trauma abdomen injuries may Sometimes be masked by other more obvious external injuries <sup>4</sup>. Out of 50 cases in our study 40% of patients were in 20-30 years of age. This observation coincides with studies of Lowe et al.<sup>6</sup> and Davis et al.<sup>5</sup> 80% of the patients were male and 20% were females with an F:M ratio of 1:4. The male predominance in our study shows the greater mobility of males for work or recreational activities resulting in a higher exposure to the risk of road traffic injuries.

Motor vehicle accidents accounted for 52% of the patients with blunt trauma abdomen. This goes in accordance with other studies conducted by Morton et al.<sup>8</sup> and Perry<sup>7</sup> Thus prevention of road traffic accidents can decrease mortality . Splenic injury was commonest intra-abdominal injury in 54% of the patients followed by hepatic injury. Small bowel perforation was the Commonest among hollow viscus injury. ileum was the Most common segment of bowel injured. These results coincided with the studies of Morton et al.<sup>8</sup> and Davis<sup>5</sup>.

Splenectomy was done for splenic trauma in 17 (34%) was the most common operative procedure done in our study .Splenectomy was done for hemodynamically unstable patients of lesser grades and most of yhe patients with grade 4 and 5 trauma. Hemodynamically stable patients were followed by serial clinical examination; ultrasonography or CECT whole abdomen thus preventing unnecessary surgical exploration. Urinary tract injuries were frequently associated with pelvic fractures., most of the renal injuries were managed conservatively however, nephrectomy through transperitoneal approach was done in one patient with Grade 5 injury, the patient recovered uneventfully . All patients of renal trauma who were managed conservatively were followed with regular CECT whole abdomen and recovered

uneventfully.

Most of the grade 1-4 kidney trauma patients can be managed conservatively. The main indications for operative intervention includes shattered kidney , renal pedicle injury, hemodynamically unstable patient, and expanding hematoma.

We accounted for one rare case of right sided diaphragmatic rupture with herniation of the bowel int right hemithorax, herniated bowel was reduced into the abdominal cavity and the diaphragmatic defect was repaired (Figure 1-5). mechanism of trauma was fall from height during avalanche in hilly area.

Most common extra-abdominal injury was rib fractures (20%) this finding was in accordance to study conducted by Fazili<sup>9</sup> et al.

Mortality rate in our study was seen in 2 patients(4%).The major cause of mortality was delayed presentation of patients due to transportation delay in hilly areas. This was in accordance with the studies conducted by Alli et al.<sup>10</sup>

Wound infection (12%) was the commonest postoperative complication in our study which in most patients was minor wound infection and was conservatively managed. This finding coincided with the findings of the studies conducted by Beall et al.<sup>11</sup>



Figure-1



Figure-2



Figure-3



Figure-4



Figure-5



Figure-6



Figure-7



Figure-8

**Figure: 6-8, blunt trauma abdomen patient with splenic injury for which splenectomy was done.**

## CONCLUSION

The most important part of blunt trauma abdomen management

includes the initial resuscitation and correct diagnosis. Morbidity and mortality can be minimized in blunt trauma abdomen patients by prompt evaluation of abdomen. Mortality can be reduced by 50% by Early diagnosis.<sup>12</sup> Hemodynamical stability assessment along with CECT abdomen are best in evaluating patients who may require surgery or in deciding which patient can be discharged from emergency department. The main drawbacks of CT scan are low sensitivity in detecting bowel injuries and its cost, and hemodynamic instability of patients. Immediate identification, timely and proper utilisation of imaging modalities in blunt trauma abdomen patients along with thorough clinical examination have significantly decreased the number of unnecessary emergency laparotomies and has increased rates and success of nonoperative management of solid organ injuries.

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