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A Study of Blunt Trauma Abdomen With Respect To Management and Outcome at Tertiary Care Centre

Dr Mayank Tandon[(1)], Dr S. K. Sagar[(2)], Dr Dhiraj Kumar[(3)], Dr Anil Negi [(3)], Dr Atul Tandon [(3)]

Department of General Surgery,
Sri Ram Murthi Smarak IMS Bareilly

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I. INTRODUCTION

Trauma has been called the neglected disease of modern society, despite its close companionship with man. Countries across the world are going through major urbanization, motorization, industrialization and alteration in the socioeconomic values. India is no different to this changing trend. Due to these changes, road traffic accidents have become the most important public hazard in the world, resulting in one of the largest threats against human lives and safety. The abdomino-pelvic cavity has been looked upon as one of the most vulnerable regions of the body and injuries involving it have always been very serious[1]. Abdominal trauma can be broadly classified into two main categories, penentrating trauma to abdomen and blunt trauma out of which blunt trauma is deceptive because of the delay in clinical manifestations.

The evaluation of the abdomen is very challenging and can often result in missed intra-abdominal injury or overuse of diagnostic imaging such as computed tomography (CT). A systematic approach should be taken when assessing the trauma patient. The primary survey should address any life-threatening injuries before evaluating the abdomen in the secondary survey. Injury grading using the American Association for the Surgery of Trauma grading scale is an important component of non-operative management of solid organ injuries. Resucitative measures like intravenous fluid administration, blood transfusion, endotracheal intubation with mechanical ventilator support were started. These patients often needed surgical intervention.[(2)]

The management of blunt trauma abdomen has undergone a paradigm shift from immediate explorations, as was the norm, to a conservative and more selective management today because of better intensive monitoring of patients aided by non-invasive technology. Our hospital is a tertiary care centre and most of the patients of RTA approach our hospital, hence we planned to conduct this study. This will be a clinical study of blunt trauma abdomen with respect to outcome and management in a tertiary care centre.

II. MATERIAL AND METHODS

This prospective, interventional and comparative study was conducted in the Department of General Surgery in a tertiary care hospital of North India from November 2019 to April 2021 after obtaining due permission from the Institutional ethical clearance committee to evaluate the patient records.

A total of 59 patients who presented with a history and clinical presentation of blunt trauma abdomen either by RTA, fall, object contact or assault were included in the study. After due consent from the patients, the demographic details, Nature of injury, Clinical examination, Laboratory and radiological Investigations, Final diagnosis, Operative findings, Operative procedures, Complications during the hospital stay were noted. Details of patient follow-up after one month were also noted.

The data was recorded, tabulated, and statistics were applied using SPSS to see significant conclusion.

III. OBSERVATION AND RESULTS-

A total of 59 patients were included in the study out of which 84.7% were males and the mean age of the patients was 29.68 ± 13.85 years. Amongst the 59 patients, Road Traffic Accident (RTA) was observed to be the most common mode of injury, in 89.8% of the patients.It was observed that tenderness was the most common presenting sign seen in 56 (94.9%) patients. This was followed by guarding and absent bowel sounds in 20 (33.3%) patients each. Haematuria, the least common symptom in our study, was observed in just 1 (1.7%) patient in this study.

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Clinical Findings	Frequency	Percentage
Tenderness	56	94.9%
Guarding	20	33.3%
Bowel Sounds Absent	20	33.8%
Distension of abdomen	18	30.5%
Shock	17	28.8%
Rigidity	4	6.7%
Haematuria	1	1.7%

When FAST was performed on these patients, 55.9% had mild fluid in the abdomen and only 3.4% patients had severe amount of fluid in peritoneum. The most commonly involved organ was observed to be the spleen, seen in 11 (18.6%) patients. Out of 59 patients only 7 were taken for CECT Whole Abdomen. Diagnostic peritoneal lavage was performed in 31 patients, blood in the peritoneal cavity was seen in 39.1% of the patients. We observed that blunt trauma abdomen (BTA) with features of Peritonitis was observed to be the most common clinical diagnosis, seen in 24 (40.7%) patients followed by BTA with Haemoperitoneum in 13 (22%) patients.

Exploratory laparotomy was performed in 49 patients and the rest were treated with conservative management. Bowel injury was seen in majority patients (46.9%) followed by splenic injury (24.4%). Retroperitoneal hematoma was seen in only 1 patient .According to the site of gastro-intestinal injury. It was observed that ileum was most commonly involved with 10 (43.1%) patients out of 23 patients. Repair of the perforation with diverting ileostomy was done in 13 patients, followed by a splenectomy in 12 patients. Liver packing was done in 9 patients, primary repair was done in 7 patients, 8 patients underwent mesenteric repair and 3 patients with feeding jejunostomy.

INJURY	NUMBER	PERCENTAGE
Liver Injury	9	18.3%
Spleen Injury	12	24.4%
Retroperitoneal Haematoma	1	2.2%
Pancreatic Injury	2	4.1%
Bowel Injury	23	46.9%
Mesentric Injury	2	4.1%
Total	49	100 %

The average duration of hospital stay was 5-10 days. Complications observed post-surgery were wound dehiscence, burst abdomen, anastomotic leak and stomal complications, including, skin excoriation, prolapse, retraction, necrosis. It was observed in our study that 26 (42.8%) out of 59 patients developed complications. More number of complications were found amongst patients with hollow viscus injury. Wound dehiscence was the only complication found amongst the patients with liver and splenic injury.

COMPLICATIONS		ORGAN INVOLVED					
		LIVER		SPLEEN		HOLLOW VISCUS	
		N	%	N	%	N	%
WOUND DEHISCENCE		2	3.3%	1	1.6%	4	6.6%
STOMAL COMPLICATIONS	SKIN EXCORIATION					9	15.2%
	PROLAPSE					2	3.3%
	RETRACTION					1	1.6%
	NECROSIS					1	1.6%
BURST ABDOMEN						5	8%
ANASTAMOTIC LEAK						1	1.6%

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91.5% patients of blunt trauma were discharged and the mortality was 8.5%. Statistically significant association was seen between the hemoglobin levels of patients and their outcome. Similarly, out of the 17 patients presenting with shock, 4 deaths out of 5 were observed.

Haemoglobin Level	Number Of Patients	Death	Improved	P-Value
<8	1	1	0	0.00014
8-10	20	4	16	
>10	38	0	38	

	Number Of Patients	Death	Improved	P-Value
Present	17	4	13	0.02
Absent	32	1	31	

IV. DISCUSSION-

Trauma is still a leading cause of a significant number of emergency visits globally. Abdominal trauma contributes significantly to the morbidity and mortality of trauma patients[3]. This study on spectrum of Blunt Trauma Abdomen was carried out to know the nature and mode of injury, organ involvement, clinical presentation, various investigation modalities, operative procedures, post-traumatic management and the outcome of Blunt Trauma Abdomen. A variety of operative procedures were adopted depending on patient general condition, peritoneal contamination, site of pathology, gut viability and surgeons' decision.

In the present study, younger population was seen to be more commonly involved in Road Traffic Accidents causing blunt trauma abdomen,62.7% were below the age of 30 years making up more than half of the study population.In our study, a total of 17 (28.8%) patients, presented with Shock. On further analysis and comparison it was observed that 4 patients out of 17 who presented with shock died whereas the other 14 patients recovered well and were discharged from the hospital, similar to studies by Tripati et al[5] 1991.. As seen in the studies, excessive blood loss in form of haemoperitoneum, or 3rd space loss in cases of perforation peritonitis was also commonly found in our study. Various studies showed that delayed presentation was a cause of shock leading ot poor outcome.[6]

In another study, generalized abdominal tenderness and abdominal guarding were the most frequent physical findings, similarly, as seen in 96% of the patients included in this study. USG whole abdomen was found to be the investigation of choice in this study, as it was useful in detecting solid organ injuries and any amount of fluid in the peritoneal cavity which was consistent with the results of Dr. Richard C Treat[7]. On the other hand, Dr. Frankois I. Luks[8] found that the sensitivity and specificity of Ultrasonography was not comparable to that of CT. The most common solid organ injury was splenic injury, seen in 18% patients followed by liver injury in 13%patients consistent with another study.

Out of the 59 patients, 83.1% underwent surgical management owing to haemodynamic instability, presence or absence of shock, clinical diagnosis, various grades and site of organ injury. The other 16.9% patients were managed conservatively after proper clinical assessment, radiological investigations and strict monitoring. Most commonly performed operative procedure was exploratory laparotomy and proceed. The most common hollow viscous organ injury was ileal perforation. These results are consistent with other studies of Davis and Morton et al[8]Following exploration of the abdomen, definitive procedures were decided on table and performed. Repair of perforation site along with ileostomy was performed in 13 patients, 7 patients underwent primary repair of perforation, mesenteric repair was performed in 8 patients and feeding jejunostomy was made in 3 patients.

In present study, 54 (91.5%) patients recovered well and were discharged from the hospital, where as 5 patients (8.5%) died, majority below the age of 30 years. On analysing the data, shock and anemia together had a diabolic effect on the outcome. Association of outcome with both shock and anemia was highly significant. (p value

0.0009 and 0.002 respectively). Blunt trauma abdomen is a diverse topic for research with immense scope. The limitation of this study was of a small sample size ,thus, further studies with larger study groups are highly recommended.

V. CONCLUSION-

Early recognition, resuscitation and treatment are paramount in the patients of blunt trauma abdomen. Patient outcome is dependent on various factors like the presenting condition, mode of injury, anaemia status, organ invloved, presence of shock and post-operative complications. Thus, timely intervention, proper assessment and management of these patients improve patient outcome. In our study, we concluded that presence of shock and anemia had a deleterious effect on the outcome of patients with Blunt Trauma Abdomen. With the advancements of well equipped ICUs, advancements in investigation modalities, quicker and more efficient transport of patients to hospitals from the site of injury, has built a large scope for Non Operative Management of patients with Blunt Trauma Abdomen but further research work is required in this field.

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