

Research Article**A cross sectional on pattern of injuries due to blunt abdominal trauma**

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ABSTRACT

Objective: To assess the pattern of injuries due to abdominal trauma

Methodology: This cross sectional study was conducted at Department of Surgery Abbas Institute of Medical Sciences, Muzaffarabad Azad Kashmir from January 2017 to June 2017. Total 110 patients of abdominal trauma and undergoing exploratory laparotomy were selected for this study.

Results: The mean age of the patients of blunt abdominal trauma was 37.11 ± 11.57 years. Males patients were 92 (83.64%) and females patients were 18 (16.36%). Total 64 (58.18%) patients were suffered from Road Accidents followed by 29 (26.36%) fall from height and 17 (15.46%) patients found with history of physical assault. Pancreas was injured in 28 (25.45%), Duodenum in 30 (27.27%), Kidney in 34 (30.91%) and 18 (16.36%) had pancreatoduodenal injuries.

Conclusion: In present study road accident were the major cause of blunt abdominal trauma and kidney was the most common injured organ. Males were more victim of blunt abdominal trauma as compared to female.

Key words: Blunt Trauma. Retroperitoneal Organs. Road Traffic Accidents. Laparotomy.

INTRODUCTION

Trauma is one of the leading preventable cause of mortality in Pakistan like other developing countries.¹ In Pakistan accidental trauma ranked four among the chief causes of death. Trauma accounts for 8% of all the deaths in our country. About 140,000 individuals die in accidents, and approximately double the number are disabled yearly.² Trauma is defined as damage to the body by exchange with environmental energy that is beyond body's resilience. Trauma is one of the most common cause of death and disability in the age of 12-60 years.^{3,4} Due to large surface area, abdomen is commonly injured regions of the body.⁵ The retroperitoneum is that portion of the

abdomen which is separated from the peritoneum anteriorly by the posterior peritoneal fascia and is bounded posteriorly by the fascia transversalis. It contains portions of the colon and duodenum as well as the pancreas, kidneys, adrenal glands, abdominal aorta, and inferior vena cava (IVC). Nearly 75% of abdominal trauma follows blunt injury.⁶ Abdominal trauma is usually associated injuries like head injury, chest trauma and bony injury. Moreover, the decision to perform laparotomy for blunt abdominal trauma is more complex and difficult, as structural injury being less obvious. The retroperitoneum is one of the most challenging areas of the abdomen.⁷ Injuries of

the retroperitoneal organs occur mainly in patients with polytrauma.⁸ Retroperitoneal injuries are among the most lethal injuries sustained by trauma patients and the most common modes of injury are road accidents, physical assault, fall from height and animal hits.⁹ Retroperitoneal organ injuries are known to occur in a significant minority of blunt abdominal trauma cases.¹⁰

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Surgery Abbas Institute of Medical Sciences, Muzaffarabad Azad Kashmir from January 2017 to June 2017. Total 110 consecutive cases sustaining blunt trauma abdomen were included in this study.

Approval was taken from institutional review committee and written informed consent was taken from every patient. All patients either male or female having age 12 to 60 years, presenting with history of blunt trauma abdomen and undergoing exploratory laparotomy were included in the study.

The diagnosis of blunt abdominal trauma was made on the basis of presence of tenderness, rigidity, and bruise on the abdominal wall. Patients presenting within 12 hours of sustaining injury will be included in the study. Patients managed non-operatively, patients suffering from any kind of penetrating abdominal injury and moribund patients of ASA-5 were excluded from the study.

Demographic profile of all the patients was entered in pre-designed proforma. Mode of injury and intra-abdominal injuries involving the kidney, duodenum and pancreas were noted. The scale devised by the Organ Injury Scaling Committee of the American Association for the Surgery of Trauma was used to grade the injuries to various organs. Grading of injuries was verified by attending consultant.

Data was analyzed by using SPSS version 17. Mean and SD was calculated for numerical data. Frequencies and percentages were calculated for categorical data. Chi square test was used as a test

of association. P. value 0.05 was considered as significant.

RESULTS

Mean age of the patients was 36.11 ± 12.57 years. Among the 110 patients mode of injury was: Physical Assault 17 (15.45%), Fall from height 29 (26.36%) Road Accidents 64 (58.18%). (Fig. 1) As shown in table 1, Pancreas was injured in 28 (25.45%) patients and Grade I, II, III IV and V injuries were seen in 7 (25%), 10 (35.7%), 7 (25%), 3 (10.7%) and 1 (3.4%) respectively. In 30 (27.27%) patients duodenum was injured followed by Grade I, II, III and IV injuries were seen in 5 (16.67%), 15 (50%), 8 (26.27%), 2 (6.8%) respectively and Grade IV injury was not seen in any subject. Out of 34 (30.91%) patients with injured kidney Grade I, II, III IV and V injuries were seen in 4 (11.8%), 10 (29.4%), 10 (29.4%), 6 (17.6%) and 4 (11.8%) patients.

Stratification of mode of injury in relation to gender was done. Out of 64 (58.18%) patients injured with road accidents 53 (82.81%) was male and 11 (17.19%) was female. Among the 29 (26.36%) patients injured due to fall from height, 24 (82.76%) was male and 5 (17.24%) was female and patients injured with physical assault 17 (15.46%), male was 15 (88.24%) and female was 2 (11.76%).

No association was seen between mode of injury and gender. P. value 0.857. (Table 2). Stratification for age was done. Out of 64 (58.18%) patients of road accident, 38 (59.38%), 21 (32.81%) and 5 (7.8%) patients belonged to age group 12-15 years, 36-50 years and 51-70 years respectively. Out of 29 (26.36%) injured with fall from height, 17 (58.62%) belonged to age group 12-35 years, 8 (27.59%) 26-50 years and 4 (13.8%) belonged to 51 – 70 years age group.

Patients having history of physical assault was 17 (15.46%), 14 (63.64%) belonged to age group 12-35 years, 4 (18.18%) to age group 36-50 years and 4 (18.8%) patients belonged to age group 51-70 years. No association was seen between mode injury and age group. P. value 0.546. (Table 3).

Fig. 1: Mode of injury

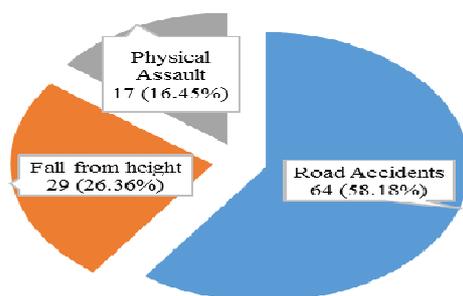


Table 1: Organ and Grades wise injures

Organ injury	Grade of injury					Total (%)
	I (%)	II (%)	III (%)	IV (%)	V (%)	
Pancreas	7 (25)	10 (35.7)	7 (25)	3 (10.7)	1 (3.4)	28 (25.45)
Duodenum	5 (16.67)	15 (50)	8 (26.27)	2 (6.8)	0	30 (27.27)
Kidney	4 (11.8)	10 (29.4)	10 (29.4)	6 (17.6)	4 (11.8)	34 (30.91)
Pancreatoduodenal	13 (72.2)	3 (16.67)	1 (5.6)	1 (5.5)	0	18 (16.36)
Total	28 (25.45)	37 (33.64)	27 (24.56)	12 (10.9)	6 (5.4)	110

Table 2: Stratification for gender

Mode of injury	Gender		Total (%)	P. value
	Male (%)	Female (%)		
Road accidents	53 (82.81)	11 (17.19)	64 (58.18)	0.857
Fall from height	24 (82.76)	5 (17.24)	29 (26.36)	
Physical assault	15 (88.24)	2 (11.76)	17 (15.46)	
Total	92 (83.64)	18 (16.36)	110	

Table 3: Stratification for Age

Mode of injury	Age Group			Total (%)	P. value
	12-35 years	36-50 years	51-70 years		
Road Accident	38 (59.38)	21 (32.81)	5 (7.8)	64 (58.18)	0.546
Fall from Height	17 (58.62)	8 (27.59)	4 (13.8)	29 (26.36)	
Physical Assault	14 (63.64)	4 (18.18)	4 (18.18)	17 (15.46)	
Total	87 (58.0)	46 (30.67)	17 (11.33)	110	

DISCUSSION: Retroperitoneal organ injuries following blunt abdominal trauma have remained a challenge to surgeons with an ever-present desire to improve the early diagnosis and the

outcome of the management. Blunt abdominal trauma is a leading cause of morbidity and mortality among all age groups.¹¹

In the our study, male patients were more victim of abdominal trauma as compare to female patients which is in agreement with study by Khan et al.⁶ Young males, most of all those aged 20 to 30 years, have been reported to be the most frequent victims. Vehicle accidents was the most common cause of blunt abdominal trauma. The second most common cause was falling from a height and the third was Physical assault. Our study showing regarding mode of injury, total 58.18% patients suffered from Road Accidents, 26.36% had a history of fall from height whereas 15.45% patients had a history of Physical Assault. Some other studies also reported road accidents, interpersonal violence and falls from height as main causes of blunt abdominal trauma.^{12,13} Ahmed et al also reported trauma as the leading cause of mortality in patients having age 1-44 years.⁹ Blunt abdominal trauma accounted for 79% cases and males are more victim of blunt abdominal trauma as compare to female. In one study by Bhattacharjee et al,¹⁴ blunt abdominal trauma is more frequent in males aged 21-30 years; the majority of patients were injured in automobile accidents.

In our study duodenum was injured in 27.27% patients. A study by Zaydfudim et al.,¹⁵ indicated that most of patients with vertical deceleration injuries (i.e., falls from heights), only 5.9% had blunt abdominal injuries. Consistent with these results, studies by Bhattacharjee et al¹⁴ and Antonacci et al,¹⁶ injuries to the duodenum account for approximately 3% to 5% of abdominal trauma.

Blunt abdominal trauma as a result of direct blow to the epigastrium, mainly due to road traffic accident and sports trauma (bicycle handle injury), accounts for 25% of all duodenal injuries as shown by Chinnery et al and Girgin et al.^{17,18}

In our study kidney damage was noted in 30.91% patients. Grad I injury was seen in 11.8% patients, Grade II, III, IV and V injuries were seen 29.4%,

29.4%, 17.6% and 11.8% respectively. Similar findings were reported by Wong et al,¹⁹ 89 cases of Grade 2 renal injuries were recorded with blunt trauma accounting for 94.4%; 57.3% were Grade 2 injuries, 12.4% Grade 3, 25.8% Grade 4, and 4.5% Grade 5. MVAs and motorcycle accidents were the most common cause of injury, accounting for 48.3% of all renal injuries.

In our study pancreas was injured in 25.45% patients, whereas 16.36% had pancreato-duodenal injuries.

Traumatic injuries of the pancreas occur after blunt abdominal traumas or penetrating wounds with a ratio of 3:1.¹⁶ These are characterized by high morbidity and mortality with a 45-50% combined rate as reported in the reviewed literature.^{17,20} Pancreatic injuries occur in 3-15% of all abdominal trauma. Isolated traumatic injuries of the pancreas are uncommon; in 50-98% of cases they are associated with injuries to other organs, such as spleen, liver, kidney, large/small intestine, veins or arteries. Due to the retroperitoneal location of the pancreas, isolated pancreatic injury occurs in less than 5% of cases of major blunt abdominal trauma.²¹

CONCLUSION

In this study road accidents were the most common cause of blunt abdominal trauma and most of the patients were found with injury of kidney.

This study highlights the need for prioritizing a public health approach to abide by traffic laws and violence prevention in Pakistan. Results of this study also reveals that male patients were more victim of blunt abdominal trauma as compare to female patients and age group 12-35 years was the most common age group of cases with blunt abdominal trauma.

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