



ORIGINAL RESEARCH PAPER

Surgery

CORRELATION BETWEEN GRADES OF INJURY, QUANTITATIVE DYSFUNCTION AND IMPACT ON FUNCTIONAL OUTCOMES AND QUALITY OF LIFE IN BLUNT INJURY ABDOMEN : A PROSPECTIVE STUDY

KEY WORDS:

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ABSTRACT

Introduction . Injury has been man's constant companion since earliest times. Blunt Abdominal trauma is one of the common associated injuries caused mainly due to road traffic accidents^{1,2}. The rapid increase in number of motor vehicles and its aftermath has caused rapid increase in number of victims to blunt abdominal trauma. Motor vehicle accidents account for 75 to 80 % of blunt abdominal trauma³. Blunt injury of abdomen is also a result of fall from height, assault with blunt objects, industrial mishaps, sport injuries, bomb blast and fall from riding bicycle. Modern trauma care has been increasing in sophistication all the time. However despite its huge importance blunt trauma has been called the neglected disease of modern society. Rapid resuscitation is necessary to save the unstable but salvageable patient with abdominal trauma. When the diagnosis is in doubt and clinical judgment suggests surgery, exploration provides definitive treatment as well as diagnosis; moreover, the risks of negative exploration have become acceptable⁴.

Aims = The objectives of the study are to evaluate correlation between grades of injury and quantitative dysfunction and impact on functional outcomes and quality of life in Blunt trauma abdomen and to evaluate pattern of abdominal organ involvement in blunt trauma abdomen patients presented in SVBP hospital.

Methods = the study was conducted in SVBP hospital meerut between june 2016 to October 2017. Total of 120 patients with history of blunt trauma abdomen were admitted in department of surgery during this period and were analysed prospectively. The data was analysed by SPSS 21.0 version.

Results = Abdominal trauma patients constituted 7.2% of the total trauma patients being the third most common cause of trauma after head trauma (51.2%) and extremity trauma (36.1%). In 71 cases of abdominal trauma patients 45(63.3%) cases were of blunt trauma abdomen and 26(36.7%) cases were of penetrating trauma abdomen. Most common mode of injury was found to be road traffic accident in the adult age group (15-40 yrs). Most common mode of injury in blunt injury abdomen was found to be road traffic accident (69%). Most common mode of injury in penetrating trauma abdomen was found to be firearm injury (73.9%). Overall most common mode of injury was road traffic accident followed by fall from height followed by firearm injury. 96% of our patients presented with abdominal pain followed by abdominal distension in 54.8%. Least patients presented with hematuria accounting for 12.5% patients. In our study, ultra sound abdomen was done in 99 cases. X-ray erect abdomen was done in 98 cases. Four quadrant aspiration was done in 90 cases. CECT was performed in 43 cases. Those patients who did not undergo CECT either they were taken for laparotomy or hemodynamically unstable. In the present study, 67 (64.4%) out of 104 cases were managed surgically. The time interval between admission and surgery varied from 1-96 hours. 15 cases (22.4%) were operated within 3 hours of admission. 22 cases (32.8%) were operated 4-6 hours after admission. 12 cases (17.9%) were operated 13-24 hour after admission, 2 case (3.0%) were operated more than 24 hours after admission.

INTRODUCTION:

Blunt Abdominal trauma is one of the common associated injuries caused mainly due to road traffic accidents^{3,4}. The rapid increase in number of motor vehicles and its aftermath has caused rapid increase in number of victims to blunt abdominal trauma. Motor vehicle accidents account for 75 to 80 % of blunt abdominal trauma¹. Blunt injury of abdomen is also a result of fall from height, assault with blunt objects, industrial mishaps, sport injuries, bomb blast and fall from riding bicycle.

Blunt abdominal trauma is usually not obvious. Hence, often missed, unless, repeatedly looked for². Due to the delay in diagnosis and inadequate treatment of the abdominal injuries, the cases can be fatal³. The knowledge in the management of blunt abdominal trauma has been progressively increasing.

In spite of the best techniques and advances in diagnostic and supportive care, the morbidity and mortality remains high. The reason for this could be due to the interval between trauma and hospitalization, inadequate or lack of appropriate surgical treatment, delay in diagnosis, post-operative complications and associated trauma especially to head, thorax.

In view of increasing number of vehicles and consequently road traffic accidents; increasing social conflict and consequently increased homicidal injuries, this dissertation has been chosen to study the cases of abdominal trauma with reference to the patients presenting at SVBP hospital, attached to LLRM Medical College, Meerut.

AIMS : The objectives of the study are to evaluate correlation between grades of injury and quantitative dysfunction and impact

on functional outcomes with quality of life in Blunt trauma abdomen and to evaluate pattern of abdominal organ involvement in blunt trauma abdomen in all patients of trauma presenting to SVBP hospital, Meerut between june 2016 and October 2017.

METHODS : This is a prospective study of correlation between grade of injury, quantitative dysfunction and impact on functional outcomes and quality of life in blunt injury abdomen during the period from 1st June 2015 to 31st may 2016 in SVBP Hospital attached to LLRM Medical College Meerut. Data will be collected from the patients in the form of clinical history, examination and appropriate investigations. Follow up will be done to note for complications. Documentation of patients, which included history, clinical findings, diagnostic test, operative findings, operative procedures, complications during stay in the hospital and during subsequent follow up period, will all be recorded on a proforma. The decision for operative or conservative management depends on the outcome of the hemodynamic status and computed tomography.

Methods of collection of data: After admission data for my study was collected by: **1)** Direct interview with the patient or patient relatives accompanying the patient and obtaining a detailed history, **2)** Thorough clinical examination, **3)** Clinical findings and relevant diagnostic investigations performed over the patient.

RESULTS

INCIDENCE: Abdominal trauma patients constituted 7.2% of the total trauma patients being the third most common cause of trauma after head trauma (51.2%) and extremity trauma (36.1%)

	No. of patients	Percentage
Total trauma patients	974	100
Abdominal trauma	71	7.2
Head trauma	498	51.2
Extremities trauma	352	36.1
Thoracic trauma	53	5.4

Type of injury	No of patients	Percentage
Blunt trauma	45	63.3%
Penetrating trauma	26	36.7%

MODE OF INJURY

Cause	<15 years		15-40 years		41-60yrs		>60 years					
	M	F	M	F	M	F	M	F				
Road Traffic accident	5	4	1	21	20	1	5	4	1	0	0	0
Fall from height	4	3	1	6	5	1	1	1	0	0	0	0
Assault	0	0	0	1	1	0	2	2	0	0	0	0

PRESENTING SYMPTOMS

Presentation	No of cases	Percentage
Abdominal pain	100	96.1%
Abdominal distension	57	54.8%
Hematuria	13	12.5%
Vomiting	33	31.7%

CLINICAL SIGNS

Sign	No. of patients
Abdominal tenderness	102
Guarding and rigidity	51
Shock	16
Absent bowel sound	33

ORGAN INJURY

In our study, ultra sound abdomen was done in 99 cases. X-ray erect abdomen was done in 98 cases. Four quadrant aspiration was done in 90 cases.CECT abdomen was performed in 43 patients.

Organ injury	No of patients	Percentage
Spleen	28	28.3%
Liver	20	20.2%
Kidney	2	2.0%
Pancreas	1	1.0%
Fluid in peritoneal cavity	66	66.7%

Injury and Admission Interval (Hrs)(LATENT INTERVAL)

Interval				
between injury and admission (hours)	Number of blunt trauma patients	Number of penetrating trauma patients	Number of Total abdominal trauma patients	Percentage
<2	6	5	11	10.6%
2-5	24	12	36	34.6%
5-10	26	4	30	28.8%
10-24	10	2	12	11.5%
>24	15	0	15	14.5%
Total	81	23	104	100

Ratio of operative to conservative treatment:

Treatment	No of patients	Percentage
Conservative	37	35.6%
Operative	67	64.4%

64.4% (Total 67 patients) of the patients underwent emergency laparotomy because of pneumoperitoneum or hemodynamic instability. 35.6% (37 patients) were managed non-operatively because they had no signs of peritonitis and they were hemodynamically stable. There was one patient with failed conservative management who was operated later on, a case of

isolated blunt pediatric pancreatic trauma. It has not resulted in complications or increased hospital stay.

ISOLATED ORGAN WISE INJURY

Organ	Blunt trauma cases	Penetrating trauma cases	Operative	Conservative
Spleen	28	0	10	18
Liver	22	0	1	21
Small bowel	14	5	19	0
Large bowel	1	5	6	0
Pancreas	3	0	2	1
Mesentry	3	1	4	0
Bladder(extraperitoneal)	1	1	1	1
Gall bladder	0	1	1	0
Omentum	0	2	2	0
Retroperitoneal hematoma	0	1	1	0
Total	72	16	47	41

Results of operation

Result of operation	No of patients	Percentage
Therapeutic	59	88%
Non therapeutic	4	6.0%
Negative	0	0%
Death	4	6.0%
Total	67	100%

Out of the operated 67 patients, 4 were non therapeutic i.e. no surgical intervention was done, 2 were penetrating trauma patients with evisceration in whom no bowel injury was found and omentectomy was done only, 2 with blunt trauma patients with hematoma at anterior wall of bladder and retroperitoneal hematoma.

COMPLICATIONS

Complications in patients undergoing surgery:

Post-op complications	No of patients
Wound infection	9
Respiratory complication	3
Wound dehiscence	4
Pancreatic fistula	1

CAUSE OF DEATH

Cause of death	Number of cases
Hypovolemic shock	2
Septicemia	2
ARDS	0
Total	4 (3.8%)

CONCLUSIONS : Trauma abdomen is the third most common type of trauma after head injury and extremities injury. Blunt injury abdomen is more common than penetrating injury abdomen. Most common age group involved is 21-30 years. Predominantly males are affected in large proportions. Road traffic accident forms the most common mode of injury in all trauma patients as well as blunt abdominal trauma So efforts should be made to bring road traffic regulations into strict action. In children self fall is the most common mode of injury, which can be prevented by good parent care. Firearm injury forms the most common mode of injury in penetrating trauma abdomen, which can be only be decreased by decreasing the crime rate. Patients with more latent interval had more morbidity in the form of septicemia and delayed wound healing as observed. So, well established trauma care centres should be established at every district hospital. Measures for early transport of the patients from the accident site to the trauma centres should be undertaken. Significant number of cases will

have associated injuries with blunt injury abdomen like head injury, thoracic injury, extremity fractures. Associated injury had a significant impact on the outcome of the abdominal trauma patients and it caused an increase in morbidity as the patients were bedridden and had more wound infections, respiratory infections. Clinical presentation is varied, sometimes confusing. Most of the patients presented with pain abdomen only, so a high suspicion of blunt trauma has to be maintained. Abdominal tenderness is the most common clinical sign in trauma abdomen patients. Blunt injury abdomen is usually less obvious. Hence, repeated examination by multispecialty personnel in a specialized trauma centre is required. Penetrating injury patient should be managed aggressively to prevent the ongoing blood loss and hemodynamic shock. Erect abdomen X ray is a useful investigation to identify associated hollow viscous injury. With the advent of high resolution ultrasonography, FQA investigations are becoming less opted. CECT forms the core investigation of choice in dealing with blunt injury abdomen patients, and becomes more important in deciding operative versus conservative management, but penetrating injury patients should be managed with early operative management. Blunt solid organ injuries can be managed conservatively most of the times if the patient is hemodynamically stable but hollow viscous injuries have to be operated. In penetrating injuries operative management is done in most of the cases until and unless diagnostic laparoscopy is available at the centre which prevents the non therapeutic and negative laparotomy.

DISCUSSION : Abdominal trauma represents the third most common cause of trauma after head trauma and extremity trauma. In 71 cases, 45 (63.3%) cases were of blunt trauma abdomen and 26 (36.7%) cases were of penetrating trauma abdomen. In this study majority belongs to 31-40 years of age group accounting for 31.2% of total trauma patients. Most common mode of injury in blunt injury abdomen was found to be road traffic accident (69%)⁵. Overall most common mode of injury was road traffic accident followed by fall from height. 96% of our patients presented with abdominal pain⁶ followed by abdominal distension in 54.8%. Least patients presented with hematuria accounting for 12.5% patients. In the present study 102 (98%) patients had tenderness of abdomen at the time of admission. Next common sign is guarding and rigidity (49%), absent bowel sounds was present in 32% and shock in 20% of the patients at the time of admission. In our study investigation modalities used are X-ray abdomen AP erect, USG abdomen and CECT abdomen. In this study, maximum number of patients (36) 34.6% were brought to the hospital between 2-5 hours after the accident, only 10.6% were brought within 2 hours 28.8% were brought between 5-10 hours and 11.5% were between 10-24 hours. 15 cases (14.5%) were brought after 24 hours. Patients with more latent interval had more morbidity in the form of septicemia and delayed wound healing as observed. In the present study, 67 (64.4%) out of 104 cases were managed surgically. The time interval between admission and surgery varied from 1-96 hours. 15 cases (22.4%) were operated within 3 hours of admission. 22 cases (32.8%) were operated 4-6 hours after admission. 12 cases (17.9%) were operated 13-24 hour after admission, 2 case (3.0%) were operated more than 24 hours after admission. Time interval between admission and surgery was more in case of blunt trauma patients esp. the patients with isolated organ injury of pancreas. It causes the increase in morbidity i.e. more time of hospital stay, wound infection. In the present study, duration of the stay ranged from 1-64 days. Mean duration of stay was 8.0 days. Mean duration of stay for operated cases was 6.4 days and that for non operated cases was 9.7 days. 6 patients (5.7%) stayed for 1-5 days. Maximum number (60) of cases 57.7% stayed for 6-10 days. 30 cases (28.8%) stayed for 11-15 days. 6 cases (5.7%) stayed for 16-20 days. 2 cases (2.1%) stayed for >20 days. Out of the operated 67 patients, 4 were non therapeutic i.e. no surgical intervention was done, 2 were penetrating trauma patients with evisceration in whom no bowel injury was found and omentectomy was done only, 2 with blunt trauma patients with hematoma at anterior wall of bladder and retroperitoneal hematoma. In this study the most common complication after operative management was wound complications including wound infection in 9 patients and wound dehiscence in 4 patients. Total no. of patients death was only 4 (3.8%) of which septicemia and hypovolemic shock were the most common cause of death.

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