

A study of management of blunt abdominal trauma and complications at tertiary health care center

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Abstract

Introduction: Abdominal trauma is increasing day by day due to increase in the number of vehicles, on the road which are responsible for increase in the road side accidents. It is leading cause of death, hospitalization, and long-term disabilities in the first four decades of life. **Aims and Objectives:** To Study Management of Blunt abdominal trauma and Complications at tertiary health care center. **Material and Methods:** The Cross-sectional and clinical study was carried out on patients with blunt abdominal trauma and were admitted to Rajarshi Chhatrpati Shahu Maharaj Medical College and Chhatrapati Pramila Raje Hospital, Kolhapur. Data was collected from 150 cases but for study 100 cases were selected by simple random sampling who fulfilled inclusion and exclusion criteria. The collected data were analyzed and mean. Percentages and proportions were calculated by using SPSS version 17. **Result:** Spleen was the most common organ involved 28(28%). Liver was 2nd most common organ injured 18(18%). Small bowel was injured in 16 (16%) cases. Large bowel and stomach in 4(4%) each. 4 cases (4%) had mesenteric injury, 2(2%) cases each had renal and pancreatic injuries whereas 2 (2%) cases had retroperitoneal hematoma. Out of 100 cases. 48(48%) were managed surgically and 52 (52%) were managed conservatively. Wound infection was the most common complication after the surgery. It was seen in 10 (20.8%) cases. Pelvic abscess developed in 6(12.5%) cases. 4 patients (8.4%) developed pneumonia. Wound dehiscence, anastomotic leakage, abdominal compartment syndrome and intestinal obstruction developed in two (4.2%) cases each. **Conclusion:** From our study we conclude that there is an increasing trend towards the non-operative management of solid organ injuries due to blunt abdominal trauma especially in hemodynamically stable patient. Non-operative management is associated with less number or complications and reduced hospital stay.


Keywords: Blunt abdominal trauma (BAL), Large bowel and stomach injury, Wound infection, Abdominal compartment syndrome, Diagnostic peritoneal lavage (DPL).

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INTRODUCTION

Abdominal trauma is increasing day by day due to increase in the number of vehicles, on the road which are responsible for increase in the road side accidents. It is leading cause of death, hospitalization, and long-term disabilities in the first four decades of life. In developing

country like India abdominal trauma is on the rise due to increased urbanization, industrialization, civil violence and criminal activities. Abdominal trauma is traditionally classified as either blunt or penetrating.¹ As compared to penetrating abdominal trauma diagnosis of blunt trauma is a real challenge even for experienced surgeon as clinical findings are usually not reliable. Fractures of lumbar vertebrae, lower ribs, decreased level of consciousness may not manifest during the initial assessment and treatment period. Mechanism of injury which causes abdominal trauma often causes other associated injuries which may divert the surgeon's attention (distracting injuries) from potentially life-threatening intra-abdominal pathology. Regional as well as worldwide variations in the etiological spectrum of abdominal trauma are well documented in the literature.² In the diagnosis the Diagnostic Peritoneal Lavage is much important, Diagnostic peritoneal lavage is a rapid and

accurate test used to identify intra-abdominal injuries after blunt trauma in the hypotensive or unresponsive patient without obvious indication for abdominal exploration. Standard criteria for a positive peritoneal lavage include aspiration of at least 10ml of gross blood, a bloody lavage effluent, a red blood cell count greater than 500/mm³, an amylase value greater than 175 IU/dl, or the detection of bile, bacteria or food fibers. The test is highly sensitive to the presence of intraperitoneal blood. However, specificity is low and because a positive test needs prompt surgical exploration, a significant number of explorations will be nontherapeutic.³ Treatment and complication of blunt abdominal injuries, Non operative management⁴. The use of non operative management strategies has always been difficult for the trauma surgeon. This approach has been embraced with fervor in pediatric trauma, whereas specialists in adult trauma have been converted only gradually, especially for many types of blunt injury. Some advantages of non surgical treatment include less cost, fewer post operative complications, and less pain for the patient.⁵ Non operative management should be considered only in hemodynamically stable patients, although the definition of stable remains elusive. Very select criteria should be used to determine the suitability for no operative management of patients with trauma. Between 60% and 70% of blunt solid organ injuries can be managed non operatively and the success rate is typically more than 90%.⁵ The study shows that no operative management of stable patients with small amounts of free fluid in the absence of significant abdominal findings is appropriate in the pediatric population. Increasing amounts of tenderness elicited on physical examination correlates well with the presence of more than a small amount of fluid. The presence of seat belt sign more than a small amount of fluid may be associated with an increased likelihood of operative intervention.⁶ Most of the trauma patients who respond to initial fluid replacement do not require surgery. Close monitoring and repeated abdominal examination can be the main criteria for surgical intervention, although they are not the most reliable techniques in the diagnosis of solid organ injuring in all patients and of hollow organ injuries in conscious patients.⁷ The study show that management of patients with blunt abdominal trauma has evolved the past two decades with increasing reliance on a non-operative approach. An in-depth understanding of the clinical and radiographic parameters used to determine those who may be eligible for this form of treatment is an essential component of modern trauma care.⁸

Resuscitations

Resuscitation in the emergency room for the patient with abdominal trauma should focus on restoration of the

airways, mechanics of breathing and circulation. Insertion of IV lines to restore circulating volume should follow the common sense rules used in all potentially injured areas of the body. Nasogastric tubes are helpful in both the evaluation and resuscitation of patients with abdominal trauma. In any patients who is stable, insertion of a nasogastric tube will eliminate acute gastric dilatation, decrease the incidence of preoperative aspiration and avoid injury to the stomach during diagnostic peritoneal lavage.⁹ Operative management: Indications:-the presence of hemorrhagic shock and physical findings consistent with abdominal injury are the historical standards by which operative indications are judged. After clinical indications second major indication for laparotomy is failed conservative management. The indication for surgical intervention therefore can be based on physical findings, hemodynamic stability, imaging studies or prior clinical experience. Conduct of the operation⁵: the abdominal incision typically extends from xiphoid process to the pubis, although there is a role more limited incisions when exact nature of the injury has been established preoperatively. Large amounts of blood may be encountered on first entering the abdomen. All four quadrants should be rapidly packed while as much blood and clots as possible are evacuated manually. Every region of the abdominal cavity then should be systematically examined until the source of bleeding has been identified. Hemorrhage control is the first priority in managing abdominal trauma. The next priority is control of gastrointestinal spillage. After these two initial goals are achieved, the abdominal cavity can be explored systematically.

Damage control laparotomy⁵

Since the mid 1980's there has been a re-emergence of the concept of packing and closing for abdominal injuries with profuse haemorrhage. Further experience with this technique has resulted in its extension to patients with other vascular/intestinal injuries, and new terms such as 'Damage control' surgery, 'abbreviated laparotomy,' 'staged laparotomy' or 'planned reoperation' have emerged. The concept of damage control has its objective of preventing imposition of additional surgical stress at a moment of physiological frailty. The concept is new; livers were packed as many as 90 years ago, although failure to understand the underlying rationale or deal with the resulting disruption to physiological process led to disastrous results.

Management of splenic trauma in adults

The classic findings of referred left shoulder pain (kehr's) and left upper quadrant dullness to percussion that changes with alterations in position (Balance's sign) usually are not demonstrable. Importantly, the patients who have an equivocal or normal physical examination

despite a high index of suspicion of spleen injury should have further evaluation, usually an abdominal scan.

MATERIAL AND METHODS

The Cross-sectional and clinical study was carried out on patients with blunt abdominal trauma and were admitted to Rajarshi Chhatrapati Shahu Maharaj Medical College and Chhatrapati Pramila Raje Hospital, Kolhapur. Data was collected from 150 cases but for study 100 cases were selected by simple random sampling who fulfilled inclusion and exclusion criteria. Patients admitted with history of blunt trauma to the abdomen and subsequently diagnosed as having abdominal visceral injuries or intraperitoneal collections shown by investigations, Unconscious patients with guarding /rigidity or distension of abdomen. Both adults and children with blunt abdominal trauma were included in the study. Patients associated with severe head and chest injuries which needed immediate neurosurgical or cardiothoracic intervention. Patients with pregnancy and associated obstetric injury. Patient with associated severe orthopedic injuries needing immediate orthopedic interventions excluded from the study. The patients were selected as per inclusion and exclusion criteria. An informed consent was taken. Careful history was taken from selected patients who then underwent general and systemic examination. Patients were evaluated in the self-designed examination proforma. The relevant investigation was done to achieve the correct diagnosis. The operative findings were noted. The follow up was done with regard to complications. In cases managed conservatively. The manner of management and complication were noted. The cause of death was noted in cases of death. Statistical analysis: The collected data were analyzed and mean. Percentages and proportions were calculated by using SPSS version 17.

RESULT

Table 1: Distribution of study subjects according to organ involved

Organ	No. of cases	Percentage (%)	Operated	Conservative
Spleen	28	28	12	16
Liver	18	18	10	08
Small bowel	16	16	16	0
Mesentery	04	04	04	0
Large bowel	04	04	04	0
Stomach	04	04	04	0
Pancreas	02	02	02	0
Urinary system	02	02	02	0
Retroperitoneal hematoma	02	02	0	02

In this study spleen was the most common organ involved 28 (28%). Liver was 2nd most common organ injured 18 (18%). Small bowel was injured in 16 (16%) cases. Large bowel and stomach in 4 (4%) each. 4 cases (4%) had mesenteric injury, 2 (2%) cases each had renal and pancreatic injuries whereas 2 (2%) cases had retroperitoneal hematoma.

Table 2: Distribution of study subjects according to management

Management	No. of cases	Percentage (%)
Surgical	48	48
Conservative	52	52
Total	100	100

Out of 100 cases. 48 (48%) were managed surgically and 52 (52%) were managed conservatively.

Table 3: Distribution of study subjects according to post-operative complications

Complication	No. of cases	Percentage (%)
Wound infection (WI)	10	20.8
Wound dehiscence(WD)	02	4.2
Pneumonia (Pne)	04	8.4
Pelvic abscess(PA)	06	12.5
Anastomotic Leakage(AL)	02	4.2
Abdominal Compartment Syndrome(ACS)	02	4.2
Intestinal obstruction(IO)	02	4.2

In the present study wound infection was the most common complication after the surgery. It was seen in 10 (20.8%) cases. Pelvic abscess developed in 6 (12.5%) cases. 4 patients (8.4%) developed pneumonia. Wound dehiscence, anastomotic leakage, abdominal compartment syndrome and intestinal obstruction developed in two (4.2%) cases each.

DISCUSSION

Trauma continues to be a major public health problem worldwide. It can affect all age groups and is associated with high morbidity and mortality in every country. Most affected age group in this study was 21 to 30 years (54% cases) followed by 31 to 40 years (18%). Similar observations are also reported in the various studies.^{10, 11,12,13} In our study we have found that spleen was the most common organ involved 28 (28%). Liver was 2nd most common organ injured 18 (18%). Small bowel was injured in 16 (16%) cases. Large bowel and stomach in 4 (4%) each. 4 cases (4%) had mesenteric injury, 2 (2%) cases each had renal and pancreatic injuries whereas 2 (2%) cases had retroperitoneal hematoma. Out of 100 cases. 48(48%) were managed surgically and 52 (52%) were managed conservatively. In the present study wound infection was the most common complication after the

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CONCLUSION

From our study we conclude that there is an increasing trend towards the non-operative management of solid organ injuries due to blunt abdominal trauma especially in hemodynamically stable patient. Nonoperative management is associated with less number or complications and reduced hospital stay.

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