

Non-Operative Management of Blunt Abdominal Trauma in a Tertiary Care Hospital in Ghaziabad

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ABSTRACT:

Background: To determine whether non-operative treatment of blunt abdominal trauma is feasible in Ghaziabad.

Methods: In a teaching hospital in the western region of Nepal, a prospective observational study that included 52 instances of blunt abdominal trauma was conducted over the course of three years. The patient and trauma features of the cases, as well as the effectiveness of various treatment approaches, were assessed. Three categories—Operative, Non-Operative Management, and Non-Operative Failure—were used to categorise all the cases. Using the Fischer Exact Test for categorical variables and the student's "t" test for continuous variables, the operational group and non-operative management group were compared.

Results: In this study 40% of the cases fell into the operative category, 60% into the non-operative management category, and 2% fell into the non-operative management failure category. In 96% of cases, nonoperative management worked. Injury severity score, entry hematocrit, and hemodynamic condition varied markedly between the non-operative care and the surgical group. A delayed hepatic haemorrhage led to non-operative management failure in one case.

Conclusion: There is a good chance of success when trying non-operative therapy for blunt abdominal trauma. The indicator of non-operative management failure is hemodynamic and clinical instability rather than the severity of the organ harm. Due to hemodynamic instability in splenic injury and peritoneal contamination in bowel injury, spleen and bowel damage are the most frequently occurring organs to require surgery. It is always ideal to have close supervision in an intensive care unit.

Keywords: Injury to the liver, spleen, and other abdominal organs; non-operative management.

INTRODUCTION:

One of the most frequent causes of avertable trauma-related death is blunt abdominal injuries. It represents 5–15% of all abdominal surgical injuries. The majority of stomach injuries (approximately 90%) are caused by blunt trauma. 2 Up to 8% of kids who have physical trauma will also have damage to their abdomen, most often to the solid viscera. [1] The care of blunt abdominal organ injury has changed over the past 20 years from operational to selective non-operative management. [3] Improved critical care, interventional radiology, and trauma procedures have made it possible to manage blunt injuries non-operatively with a success rate of approximately 85%, according to reports. [4] According to recent studies, non-operative treatment is used to treat between 50% and 98.5% of patients with blunt hepatic damage, while failure rates range from 3% to 15%. For paediatric patients, reported success rates for non-operative care of blunt splenic injury are 95% or higher, while for adults, they are around 80% or higher. [3] This observational study examined the viability of non-operative treatment for Blunt abdominal trauma in a teaching hospital of tertiary care in a developing country.

METHODS:

This prospective observational study was conducted at Santosh Medical College and Hospital, a tertiary care facility in the western region of Nepal. The study comprised 50 patients who had sustained blunt abdominal injuries. The surgical team attended after the emergency duty doctor had evaluated each patient for blunt abdominal damage. Following the original survey, Advanced Trauma Life Support (ATLS) recommendations for resuscitation were followed. [5] Patients were classified as hemodynamically stable or unstable after resuscitation based on their entrance hematocrit, systolic blood pressure, pulse rate, and respiration rate. Without delay, all unstable patients were sent to the operating room. After resuscitation, patients who were hemodynamically and clinically stable underwent additional testing. Every case received a routine ultrasound, but only those who experienced a diagnostic conundrum after an ultrasound had been performed underwent an abdomen and pelvic CT scan. The study excluded patients who passed away while receiving resuscitation in the emergency room. Following resuscitation, all patients who were hemodynamically and clinically stable were assigned to the non-operative management group. These patients had routine physical examinations, hematocrit measurements, and admission to the surgical intensive care unit. When in question, the radiological evaluation was repeated. Patients who became worse underwent surgery and were categorised as members of the non-operative management failure group. The surgeon in charge of the unit made the decision to operate on the cases that were kept in the non-operative management group. Age, sex, and trauma characteristics of patients were noted in the data (mode of injury, hemodynamic status, organs injured, injury grading, hospital stay etc).

RESULTS:

In total, fifty patients participated in this study, of whom 30 (60%) were handled non-operatively and 20 (40%) received surgical intervention. In non-operative management, there was one (2%) failure. There were 16 women and 34 men. With a mean age of 28.12 years and a range of ages from 5-70, the majority of the patients were young adults (20–40 years). Age and sex differences between the surgical management group and non-operative management group were not found to be statistically significant. Road traffic accidents were most frequently to blame (72%) for blunt abdominal injuries (RTA). In the operating management group, the mean ISS was 18.5, while in the non-operative management group, it was 11.4. There were significantly more cases in the group under operative control that were brought on by RTA, and their mean ISS was likewise much greater. Regarding injuries from falls or sports, there was no discernible difference between the two groups. The non-operative management group also had no incidences of tachycardia and much fewer cases of hypotension.

Table1: Patient features at admission

	OperativeGroup	Non-operative management group	P-value
Mean Age	29.05	24.84	0.36
Male sex	10(50%)	22 (73%)	0.35
ModeofInjury			
RTA	9(45%)	27(87%)	0.008
FallInjury	4(20%)	2(9%)	0.12
SportsRelated	3(15%)	1(3%)	0.05
Mean ISS	18.15	12.41	<0.001
Mean Hct*	28.89	40.13	<0.001
SBP>90mm Hg*	2(10%)	27(87%)	<0.001
Pulse < 100*	0	29(90%)	<0.001

* Emergency department values

The liver and kidneys in 18 patients in the operative management group were Injuries to the spleen and hollow viscus (bowel) accounted for 30% and 45% of cases, respectively.

Table2: Symptoms of Injury

Organ Involved	Operative Group	Non Operative Group	P-value
Liver	6(30%)	12(40%)	1
Spleen	6(30%)	1(3.3%)	0.002
Kidney	0	2(6%)	0.26
Bowel	9(45%)	0	<0.001

In 6 cases, splenectomy was performed, and in 3 cases, liver lacerations were repaired. Out of 10 occurrences of intestinal injury, the colon, stomach, and small intestine were all affected in one instance. In one case of small bowel perforation, resection and anastomosis were necessary, but the majority of the other cases were healed. Spleen and intestine injuries were much more common in the group receiving surgical care, although liver and kidney damage did not differ significantly between the two groups. The grade of harm to several organs according to the ISS system. One patient with grade V liver damage experienced non-operative management failure. The sixth day after being admitted, he underwent surgery for hemodynamic instability. Our series didn't have any fatalities.

DISCUSSION:

Blunt abdominal trauma non-operative management is not new. It has gained widespread acceptance over the past few decades, and tactics based on hemodynamic stability and CT scan results are now frequently employed. Even patients with hemoperitoneum, changed mental condition, more severe injuries, and older ages are now routinely managed non-operatively in many well-established trauma centres with relatively few failures[7]; nevertheless, in a hospital with inadequate facilities, it frequently becomes a struggle. Stf blunt hepatic, splenic, and renal injuries have clearly demonstrated the trend toward non-operative therapy of solid organ injuries, which is further supported by the growing accessibility and precision of numerous modern diagnostic techniques. Technologies for patient monitoring and imaging. [8,9] However, non-operative management of trauma also leads to a sharp decline in the rate of both therapeutic and non-therapeutic laparotomies. Non-operative management of trauma may occasionally be associated with risks of missing hollow visceral injuries, delayed bleeding, and transfusion related risks. Non-operative therapy should be chosen for patients based on their hemodynamic and clinical status, not on the degree or severity of organ injury. [10] Any patient who exhibits hemodynamic instability or peritonitis should be taken right away to the operating room. Close monitoring of vital signs and regular physical examinations are implemented if it is decided to monitor the patient and pursue non-operative therapy. If the non-operative strategy is not working, more laboratory tests, such as repeated measurements of the white blood cell count, haemoglobin and hematocrit levels, serum lactic acid level, and base deficiency, may be necessary. An indication for surgery is the development of peritonitis on physical examination and a lack of response to non-operative therapy. In our series, there was a significant difference between the groups receiving operational and non-operative therapy ($P < 0.001$) in the hemodynamic status at presentation, the admission hemocrit, and the injury severity score. Another crucial element in the efficacy of non-operative management is associated organ involvement. The most common failure rate is splenic damage, which can reach 30%. [3,11] Splenic trauma was present in a statistically significant greater proportion of instances (30% vs. 3.3%) in the group receiving surgical care. There is evidence that even very serious splenic injuries with substantial hemoperitoneum can be successfully treated nonoperatively. [12] In 80–90% of

cases, splenic injury that stabilises quickly and doesn't require much fluid or blood replacement is successful. [12] The vast majority of cases are being treated conservatively, demonstrating that the liver is a strong and long-lasting organ. In this study, the liver was damaged in 40% of cases with non-surgical management and 30% of instances with operative management (P=1). The only non-operative therapy failure in this study included a patient with a grade V hepatic laceration who developed hemodynamic instability on day six after arrival. According to some authors, grade IV and V liver High morbidity is frequently linked to injuries (20% and 62%, respectively). Selective angioembolism, percutaneous drainage, ERCP, and other minimally invasive procedures can successfully treat the majority of problems such persistent bleeding, biloma, bile peritonitis, abscess, or fistulae. [13,14] None of the subjects in our study had any such issues. Similarly Additional, non-operative treatment has been used for gut and kidney injuries. Renal trauma (grades I to III) is typically managed without surgery. Non-operative treatment is effective for contusions, contained lacerations, and even lesions with a small quantity of extravasation of blood or urine in the hemodynamically stable patient if the injury is staged correctly. In stable cases with renal arterial thrombosis, non-operative therapy may be tried, albeit with the knowledge that late nephrectomy is a possibility. Only in the event of isolated contusions may non-operative therapy of the blunt trauma involving the bowel be attempted. In 45% of cases, reports of duodenal injury management have been successful. [15] Similar treatment methods may be used for intestinal injuries as long as the patient is stable and has a localised hematoma or contusion on the colon wall. The patient should have routine clinical and radiological reevaluations. If there is any sign of peritonitis or if the clinical signs get worse, the patient should be taken to the operating room. In our example, all 10 intestinal damage sufferers underwent surgery because they all had perforations at different places.

CONCLUSION:

In our study, 96% of cases treated without surgery were effective. Blunt abdominal trauma can be successfully treated non-operatively in most cases. Failure in non-operative management is predicted by hemodynamic instability and clinical instability rather than the severity or grade of organ injury. Due to peritoneal contamination in bowel injuries and hemodynamic instability in splenic injuries, these two organs frequently end up in the surgical group. It is always preferable to keep an eye on such a patient in an intensive care unit.

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