



SURGICAL APPROACH TO TRAUMATIC JEJUNAL PERFORATION WITH MESENTERIC TEAR - A TERTIARY CENTRE EXPERIENCE

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ABSTRACT This case report presents the surgical approach to traumatic jejunal perforation with mesenteric tear based on experiences at a tertiary center. Key points include the management strategies outcomes and complications associated with this specific type of injury. The relevance lies in improving the understanding and treatment of traumatic jejunal perforations which can have significant morbidity and mortality rates if not managed promptly and effectively. The impact of this study is to contribute valuable insights into the surgical management of a challenging condition.

KEYWORDS : Blunt Abdominal Trauma, Jejunal Perforation, Mesenteric tear, computed tomography abdomen

INTRODUCTION

Blunt abdominal trauma (BAT) is one of the common conditions that comes to emergency, which can result in injury to intraabdominal organs, out of which solid organ injury is the predominant one [1]. Small bowel injury being the third most common abdominal injury associated with blunt trauma to the abdomen [2, 3]. Isolated perforation of the small bowel such as the jejunum (isolated jejunal perforation—IJP), following blunt abdominal trauma is an extreme rarity with an incidence of 0.3% [4, 5]. The most often documented mechanisms of jejunal perforation resulting from BAT are car crashes, bicycle handlebar injuries, assaults by people and animals, and a few cases of falls from heights [6, 7]. The abrupt rise in intraluminal pressure in a fluid- or air-filled bowel loop that results in punctate or slit-like perforations (blowout) on the antimesenteric wall of the colon is the mechanism responsible for bowel perforation caused by BAT [8–9]. A major diagnostic conundrum arises when there are no other intra-abdominal injuries and there is little to no surrounding tissue injury, which has a substantial impact on morbidity and death [7]. With the emergence of focused assessment with sonogram in trauma (FAST), and abdominal computed tomography (CT) has led to improved precision. Mesenteric injury along with small bowel injury is a rare entity to be managed by Trauma surgeons and general surgeons. So we present a case of blunt trauma abdomen with jejunal perforation and mesenteric tear. The purpose of publishing this paper is to highlight the diagnosis and management of blunt trauma of the abdomen with different spectra of injuries associated with it

CASE REPORT

A 28-year-old male patient came to the emergency after being referred from the nearest district health center following the road traffic accident in which the victim, while riding the four-wheeler got hit against the wall which made the victim stuck against the steering wheel. The patient complained of severe abdominal pain with obstipation. On examination, the patient is conscious and oriented with vitals being stable. On initial evaluation, the abdomen is distended with mild tenderness with patterned abrasion in the lower abdomen.

Table 1 Initial Blood Investigation

Sl no	BLOOD PARAMETERS	VALUE
1.	HEMOGLOBIN	13.1
2.	TOTAL LEUKOCYTE COUNT	3320
3.	PLATELET COUNT	269000
4.	TOTAL BILIRUBIN	1.32
5.	INDIRECT BILIRUBIN	0.63
6.	AST/ALT RATIO	2.7
7.	ALBUMIN/GLOBULIN RATIO	2.77
8.	SERUM CREATININE	1.79
9.	PT/INR	14.5/1.38
10.	APTT	27.7

(AST/ALT – Aspartate Aminotransferase/Alanine Transferase)

(PT- Prothrombin Time , INR-International normalized Ratio, APTT- Activated Partial Thromboplastin Time)

Radiological investigation done after initial resuscitation completed
ULTRASONOGRAPHY OF ABDOMEN – Moderate fluid collection with internal echoes within the peritoneal cavity [fig.1] and
COMPUTED TOMOGRAPHY OF ABDOMEN AND PELVIS – Revealed hollow viscus perforation with hemopneumoperitoneum [fig.2]

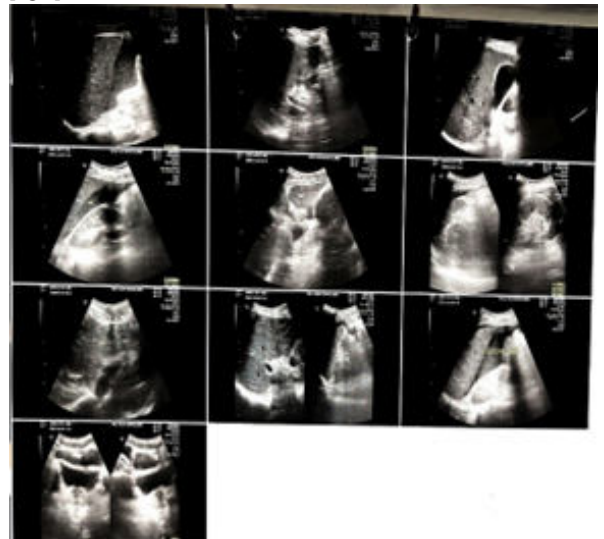


Figure 1 Ultrasonography of the abdomen showing moderate fluid collection and internal echoes

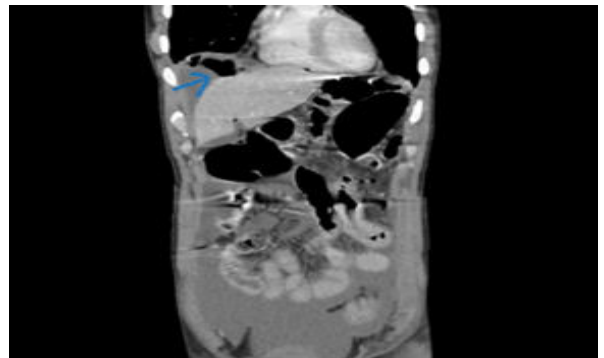


Fig. 2 Coronal Section Of CT Scan Showing Hemopneumoperitoneum With Dilated Small Bowel

Based on the above imaging findings, the patient underwent median laparotomy which showed the following intraoperative findings: 1. Approximately 1-1.5 liters of hemorrhagic fluid with fecal matter drained out; 2. Single jejunal perforation which is located about 90 cm distal to the duodenojejunal flexure (fig. 3a); 3. Mesenteric tear at about 50 cm proximal to ileocecal junction (fig. 3b).



Figure.3a Jejunal perforation which located 90cm distal to duodenojejunal flexure

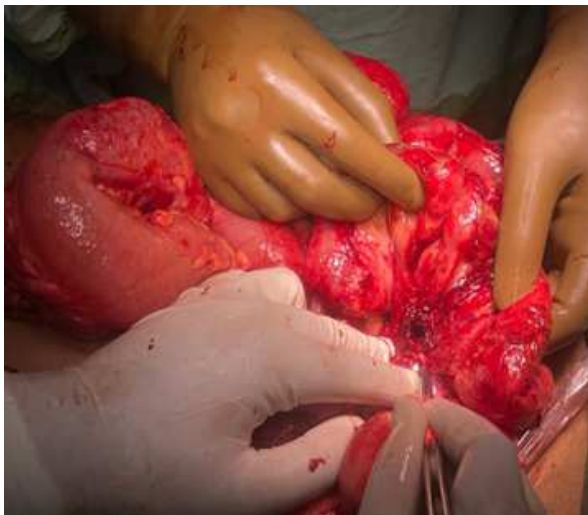


Figure.3b Mesenteric tear located at 50cm distal to the ileocecal junction

Based on the above intraoperative findings, peritoneal toileting was done followed by primary repair of jejunal perforation and mesenteric tear respectively with feeding jejunostomy done. Postoperatively, feeding started through feeding jejunostomy on the third postoperative day. Patient was discharged on postoperative day 14

DISCUSSION

The third most frequently injured body component after trauma from blunt or penetrating force is the abdomen [10]. Blunt abdominal trauma is comparatively more prevalent and frequently causes damage or rupture of solid organs (such as the liver and spleen). Small bowel perforation (SBP) caused by blunt abdominal trauma is less common and causes substantial morbidity and death when noticed late. This typically happens when there are fewer best diagnostic instruments in areas where expectant care is employed [10-11]. Motor vehicle accidents account for more than 70% of BAT followed by intentional and unintentional human assault, while falls from a height and animal attacks are uncommon [6, 7, 12]. The mechanism of small bowel injury in BAT is typically caused by hematomas or mesenteric lacerations as a result of direct compression between the spinal column and abdominal wall. Shearing forces and/or "blowout" holes brought on by an abrupt rise in intraluminal pressure in a loop filled with liquids or air of the colon [13]. The affected part of the small bowel following blunt trauma to the abdomen is usually a fixed segment such as the duodenum & duodeno-jejunal flexure [14], followed by the proximal jejunum and terminal ileum [15], often associated with mesenteric injury [16].

Traumatic jejunal injuries occur more at the ligament of Treitz and are mostly due to acceleration-deceleration injuries which is seen in steering wheel injuries. Most symptoms of bowel injury from BAT are typically ambiguous and nonspecific, so diagnosing it can be extremely difficult. Nonetheless, the most frequently reported symptom is abdominal pain, and in more than 64% of cases, there is an absence of bowel sounds, which should warn the doctor of such serious damage [7]. Often, a diagnosis cannot be made just by clinical presentation and physical examination, but it is supported by radiographic tests like plain abdomen and chest X-rays which become crucial first-line tests in resource-limited centers. In a study by Saku et al. Just 8% (1 out of 12 patients) of patients with traumatic intestinal perforation showed open air beneath the diaphragm in chest X-rays as compared to 92% (11 out of 12 patients) excess luminal air was detected by CT scan [16]. Therefore, CT scan is considered the gold standard in assessing blunt abdominal trauma. Severe morbidity and mortality are known to result from delayed diagnosis of intestinal damage. Multiple organ failure, hemorrhagic shock, ischemia, and necrosis along with sepsis are the primary causes of morbidity and death in intestinal injury [17]. The younger age, stable vitals, early presentation to the health facility and immediate surgical intervention were some of the favorable prognostic factors in our case.

CONCLUSION

Small bowel perforation has low mortality and complication rates if it is treated earlier than 24 hours after injury. The principle of "rushing to the operation suite" for a stable patient with blunt abdominal trauma without detailed systemic examination is not justified. Because delay in diagnosis does not seem to affect morbidity or mortality, dedication to radiological investigation and serial physical examinations will aid in the proper identification of elusive small-bowel and mesenteric injuries in blunt trauma. According to some experts, complications are linked to delays in diagnosis, and fatality is linked to more severe concurrent injuries. In our case the patient's clinical condition was not severe enough to support the diagnosis; rather, our continued high level of clinical suspicion led us to carry out more investigation that brought the perforation to light. Considering the aforementioned, we can conclude that it is difficult to diagnose traumatic jejunal perforation. Vigilance and the maintenance of a high index of clinical suspicion are necessary for the best results. Repeated physical examinations and the relevant imaging modalities that are available help achieve this.

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