

## ISOLATED JEJUNAL PERFORATION FOLLOWING BLUNT INJURY ABDOMEN: A CASE REPORT

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**ABSTRACT**

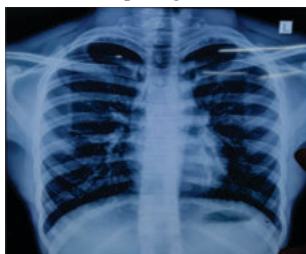
Small bowel injury following blunt abdominal trauma has been widely reported. It occurs in 3% to 5% of cases of blunt injury abdomen. Isolated jejunal perforation caused by blunt injury abdomen is rare and most often seen after motor vehicle accidents. The initial clinical examination can be unremarkable because signs of hollow viscus injury may take time to develop. Although the erect chest radiograph was negative for free air, abdominal computed tomography scan revealed a large amount of free intraperitoneal air. Early surgical intervention led to good recovery in these cases. A high index of suspicion, repeated clinical examination and the proper utilization of investigational tools definitely helped us in managing this kind of rare case.

**KEYWORDS :** Blunt injury, jejunum, perforation, trauma**INTRODUCTION**

Small bowel injury from BAT is the third most common abdominal injury [1, 2]. Blunt abdominal trauma (BAT) can result in injury to intra-abdominal organs, but solid organ injuries are predominant as reported in the literature & most of them are managed conservatively [3]. Although jejunal perforation from blunt abdominal trauma is a common injury, isolated jejunal perforation is extremely rare with an incidence rate of 0.3%. [4,5, 6]. Diagnosis can therefore be very elusive. The commonest reported mechanisms of IJP due to BAT are motor vehicle accidents, bicycle handlebar, human and animal assault, and a few reported cases of falls from heights [7, 8]. Punctate or slit like perforations (blowout) often occurring on the anti-mesenteric border are probably the consequence of a sudden increase in the intraluminal pressure in a fluid or air-filled loop. These perforations may be missed initially and may become apparent around three days after the injury [9 -12]. Absence of other intra-abdominal injuries and the associated minimal and sometimes no surrounding tissue damage leads to a huge diagnostic dilemma and significantly affects morbidity and mortality [8]. Marked improvement in the use of diagnostic peritoneal lavage (DPL), focused assessment with sonogram in trauma (FAST), and abdominal computed tomography (CT) has led to improved precision of diagnosis, a decrease in false-negative laparotomies, and an increase in good outcomes in abdominal injuries [12, 13]. Taken into account, of these outlined diagnostic dilemmas and an unusual cause of BAT, we seek to present this case study.

**CASE REPORT**

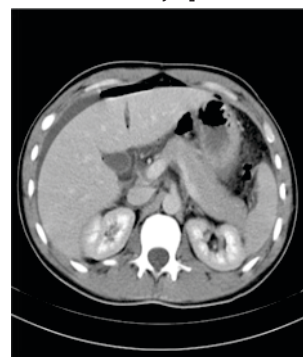
A 23-year-old male presented to the emergency ward with history of road traffic accident, skid & fall from two wheeler. On examination, there were no external bruises on the abdomen & the abdomen was not distended but full and moved with respiration. There was a marked tenderness over the epigastrium & umbilical region. Percussion note was dull, and bowel sounds were absent. Other vital signs checked were essentially normal except for tachycardia, pulse 102 beats per minute. An urgent chest X-ray (Fig1) requested showed no air under the diaphragm,

**Fig 1: Chest X Ray – Negative For Air Under Diaphragm**

while the supine abdominal X-ray (Fig2) was unremarkable.

**Fig 2: No Significant Abnormality**

Focused assessment with sonogram in trauma (FAST) was negative for free fluid. Even hours following his admission, due to the persistence of abdominal tenderness and the high suspicion for intraabdominal injury, an abdominal computed tomography (CT) with IV contrast was performed (fig3), which demonstrated a large amount of intraperitoneal free air, suggestive of a hollow viscus injury.

**Fig 3: CECT Abdomen & Pelvis – Revealed Large Amount Of Intraperitoneal Air**

The patient was resuscitated and had a successful exploratory laparotomy. The following intraoperative findings were discovered: about 500ml of toxic fluid was drained from the abdomen & flakes noted over the small bowel & mesentery and a single isolated jejunal perforation of about 1×2cm on the antimesenteric border (Fig4), 15cm from the Duodenojejunal flexure, was discovered.



**Fig 4: Isolated Jejunal Perforation**

Exploration of the rest of the peritoneal cavity was unremarkable. Resection & anastomosis of ruptured jejunum was done. (fig5)



**Fig 5: End To End Jejunojunction**

## DISCUSSION

Following trauma, the abdomen is the third most commonly injured part of the body, either by penetrating or blunt force [14]. BAT is relatively more common and often results in solid organ (e.g., spleen and liver) rupture or damage & most of these conditions are managed conservatively. Small bowel perforation after blunt abdominal trauma is a rare condition (0.3% of blunt trauma admissions) but associated with significant mortality & morbidity when detected late [3]; the vast majority is caused by motor vehicle accidents, handle bar injury and falls [15]. Over 70% of BAT is caused by motor vehicular accidents, followed by other means such as bicycle handlebar, intended and unintended human assault, fall from a height, and rarely assault from animals [7, 8, 16]. Although, the exact pathophysiologic mechanism for traumatic blunt small bowel injuries is not well understood, but some mechanisms have been described [17]. A sudden increase in pressure within a closed segment of intestine would explain antimesenteric perforation as the ones seen in our patient. The affected part of the small bowel is usually a fixed segment such as the duodenum, duodeno jejunal flexure [18], proximal jejunum, and terminal ileum [19], often associated with

mesenteric injury [20]. More specifically, traumatic jejunal injuries occur more at the ligament of Treitz, and that is in acceleration-deceleration injuries. Bowel injury from BAT poses a huge diagnostic challenge since most signs are usually vague and nonspecific; however, abdominal pain is the most commonly reported symptom together with absence of bowel sounds occurring in over 64% of cases [8] which should alert the clinician of such significant injury. Clinical presentation and physical examination alone are often not sufficient to make a diagnosis, and reliance on radiological investigations such as chest and plain abdominal X-rays (erect and supine) becomes important first-line tests in resource-constrained settings. However, in a study by Saku et al. [20] only 8% (1 out of 12 patients) of patients with bowel perforation after trauma evaluated, demonstrated free air under the diaphragm on chest X-ray as compared to 92% (11 out of 12 patients) in whom extra luminal air was detected readily by CT scan. Nowadays, with the information provided by CT as much as 50% of patients with blunt solid organ injury are eligible for nonoperative management [13]. CT with a sensitivity and specificity of 97.7% and 98.5%, respectively, is considered the gold-standard for the detection of Small bowel injury [21]. There have also been reports that left lateral decubitus X-rays may better clarify where CXR have failed. However, this was not carried out for our patient. The use of DPL, FAST, and abdominal CT scan therefore adds significantly to the precision in diagnosis and early intervention for improved outcomes [10]. Although CT scan is the gold standard for assessment of blunt trauma [10], DPL still has some diagnostic value [22–24]. Ultrasound is poor in diagnosing bowel pathologies due to presence of gas. With the above in mind, we can conclude that diagnosis of traumatic jejunal perforation is challenging. For optimal outcomes, vigilance is needed together with the maintenance of a high index of clinical suspicion. This is achieved with repeated physical examinations and the available appropriate imaging modalities.

## CONCLUSION

Isolated jejunal perforation is rare but deadly injury. Although, uncommon small bowel injuries are associated with high mortality & morbidity. Hence, there forth a high index of suspicion following detailed history and a thorough physical examination are essential in making prompt diagnosis and with the available appropriate imaging modalities.

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