Case report

Laparoscopic repair of ileal perforation post blunt abdominal trauma: A Case Report.

Abstract

Blunt trauma to the abdomen is considered one of the most leading causes of death among all age groups. Delayeddiagnosis of small bowel perforation can result in serious complications and death, making timely diagnosis critical in the treatment of these patients. The diagnosis of small bowel perforationis usually made by imaging techniques that detect the presence of fluid or gases in the peritoneum or mediastinum.There are different treatment options forsmall bowel perforation; conservative treatment is not favoured.

Herein, we present the case of a 35-year-old gentleman diagnosed with a perforated viscus following a road traffic accident(RTA).A diagnostic laparoscopy was performed, and a 1 cm perforation of the terminal ileum was repaired. Postoperative recovery was uneventful except for mild paralytic ileus. The patient was discharged 8 days later and reviewed at the surgical outpatient department afterone- and two-months post-surgery, with no reported complaints.

Keywords: Blunt abdominal trauma, Ileal perforation, laparoscopic repair, Road traffic accident.

Introduction

Blunt trauma to the abdomen is considered one of the most leading causes of death among all age groups. Thus, it is an important topic of discussion and research(1). There are many causes of blunt abdominal trauma (BAT)such as assault, falls from height, and animal attacks. However,road traffic accidents are consideredthe most common cause of BAT to the abdomen. (2,3). The diagnosis of small bowel perforation in patients withBTAis infrequent as the injury needs to besevere to cause perforation.A hollow viscus injury is not usually suspected unless the clinical condition is highly suggestive(3).A delay in the diagnosis and treatment of the hollow viscus injury will cause the development of peritonitis, and hemodynamic instability leading to increased mortality and morbidity(2).Although small bowel perforation is rare, it is a clinically complex medical condition with high mortality and should be diagnosed and managed early for a better prognosis (4). Properly managing small bowel perforation can go through early stabilisation, administration of antibiotics, and surgical source control, with prompt operative intervention(5).

Case report

A 35-year-old gentlemanpresented tothe emergency room of the casualty department in an emergency center away from our hospital by

about 80 Kilometers at 2:00 am following RTA, he was complaining of right-sideabdominal pain. He was vitally stable, and his abdominal examination showed right-sided abdominal tenderness. His labs were normal (WBCs 8.5, Hb 12.4). He was managed according to the ATLS protocol. His chest and pelvic X-rays were normal. Pan computed tomography(PAN-CT) (brain, chest abdomen and pelvic) was requested, which revealed minimal pelvic free fluid with mild ascending colon oedema (Figure 1). At 5:00 am, the patient was admitted toour hospital forobservation. A serial abdominal examination was started, but the abdominal examination revealed board-like rigidity at 9:00 am. The patient was shifted to the operating theatreat 9:30 am as an erect chest x-ray revealed massive air under the diaphragm (Figure 2). Diagnostic laparoscopywas started, and we found intestinal contents inside the peritoneal cavity then running of the small bowel was done and revealed a 1 cm perforation at the ileum, about 120 cm from the ileocaecal junction (Figure3). Laparoscopic repair was done by Vicryl 2/0 in 2 layers and generous peritoneal washing with warm saline and 2 drains were fixed one in the pelvis and one subdiaphragmatic above the liver. post-operative recovery was complicated by paralytic ileus, and the patient was discharged after 8 days. After 1 month and 2 months,the patient was reviewed in the surgical outpatient clinic, and he has no complaints.

Figure1: CT abdomen, NO pneumoperitoneum was detected.

Figure2:ERECT CHEST X-RAYshowing bilaterally massive pneumoperitoneum.

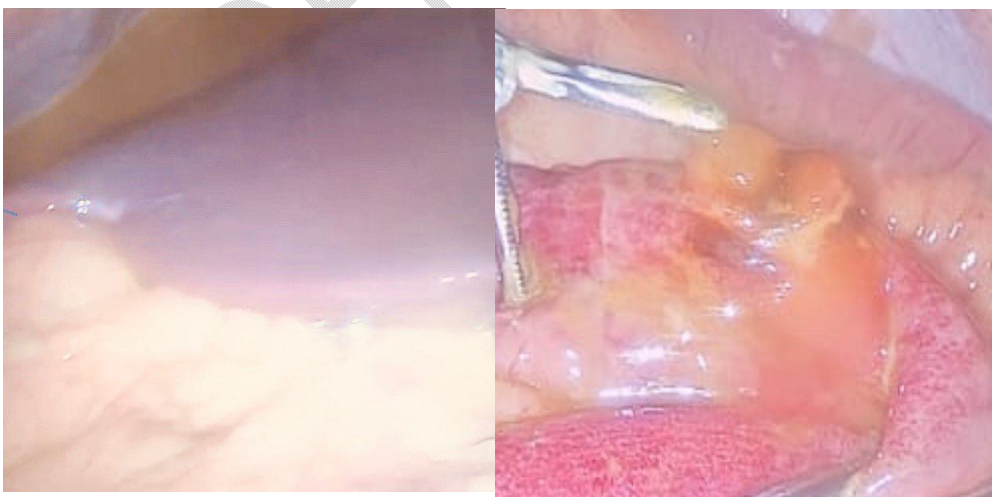

Figure3: Intraoperative finding of intestinal contents and the perforation of the ileum.

Discussion

Because of modern life, developments in industry, various transport systems and violence, there is an increase in the number of patients with blunt trauma to the abdomen (6). The bowel injury following BAT is frequently undetected, so the diagnosis is usually too late despite advanced imagingtechniques such as focused abdominal sonography for trauma and computed tomography scans (7).Apart from our patient, he was diagnosed within hours and was in the operating theatrewithin about 7-8 hours. Traumatic causes of small bowel perforation can be due to blunt or penetrating injuries(our casewas afterBAT).The small bowel occupies the majority of the abdominal cavity, making it the most frequently injured hollow organ in the abdomen, particularly in cases of penetrating trauma such as stab wounds or gunshots. Blunt abdominal trauma due to RTA is one of the most common causes of small bowel perforation (as seen in our case). Seat-belt users account for approximately 75% of gastrointestinal trauma with potential perforation(9). There aretwo types of small bowel perforation: free or contained perforation. Freeperforations create an open hole that allows the intestinal material to escape into the normally sterile peritoneal cavity and can cause infection, inflammation, and other complications to the surrounding tissues and organs (as you can see in our case). On the other hand, contained perforations are those in which an ulcer

creates a full-thickness hole, but the adjacent organs seal it and prevent the free spillage of the intestinal content (10). A high degree of suspicion of intra-abdominal injuries, even in cases following minor trauma will prevent the diagnostic errors. Early diagnosis and effective management of gastrointestinal perforations (as revealed in our case) following BAT to the abdomen helps in decreasing overall morbidity and mortality among these patients (11).The symptoms of small bowel perforationmayrange from localised abdominal pain to systemic symptoms like fever, nausea, vomiting, and even shock. Additionally, rigidity, guarding, and other peritoneal signs which may appear later(12).Although erect plain X-raysare usually the first imaging option to start with and can detect signs of perforation, they cannot localise the site of perforation (13). The abdominal computed tomography scan is regarded as the imaging modality of choice for hemodynamically stable patients; however, negative results don't rule out the diagnosis of small bowel perforation (14)(as inour case, **NO** pneumoperitoneum in the abdominal computed tomography was detected). In the **EAST trial**, 13% of the study samples who were discovered to have asmall bowel perforation at laparotomy had no positive findings before surgery (15). Delays in the diagnosis of small bowel perforation can result in serious complications and death, making timely diagnosis critical in the treatment of these patients (16). In trauma patients, laparoscopic

interventions with normal haemodynamic parameters are an excellent modality to identify any abdominal injuries. Laparoscopy is more efficient and cost-effective and associated with fewer complications in comparison with traditional laparotomies (17). Although there are different options of treatments for the perforation of the small bowel, conservative treatment is not favoured (18). Laparoscopy and opensurgery (primary repair, anastomosis, and stoma) are mainly used, which may be related to timely preoperative management, good resuscitation of septic shock, and timely application of broad-spectrum antibiotics in the perioperative period (19).The mortality rates among patients diagnosed with BAT with small bowel perforation are linked to the delay in initial diagnosis, development of multi-organ failure, and sepsis as emphasized by the **EAST trial,** which reported a rise in mortality rate from 4% to 16% when the diagnosis is delayed for more than 24h. it was further highlighted that when small bowel perforationwas present the mortality rate rose from 14% to 19% (9).

Conclusion

Small bowel perforation following blunt abdominal trauma is rare. Thorough clinical assessment through serial abdominal examinations, alongside investigations that may sometimes be inconclusive, and timely surgical intervention can play a crucial role in reducing morbidity

and mortality.The minimally invasive techniques such as laparoscopy offer an excellent option for the effective managementof blunt abdominal trauma.

ETHICAL APPROVAL

The author(s) have collected and preserved written ethical approval as per international or university standards.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

DISCLAMER: **NO generative AI technologies were used.**

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