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.Delay in the diagnosis of small bowel perforation can result in serious complications and death, making timely diagnosis critical in the treatment of these patients.

We present a male patient aged 35 years old, a case of road traffic accident (RTA), diagnosed as perforated viscus. We did a diagnostic laparoscopy, and laparoscopic repair of 1 cm perforation of the terminal ileum was done.post-operative recovery was smooth as the patient gradually improved and was discharged after 8 days.The patient was reviewed in the surgical outpatient clinic (SOPD)after one and two months with no 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 such as assault, falls from height, and animal attacks. However,road traffic accidents are

consideredthe most common cause of blunt trauma to the abdomen. (2,3).The gastrointestinal perforation diagnosis after blunt abdominal traumais 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 results in early 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). Small bowel perforation is usually managed by early stabilisation, antibiotic therapy, and surgical source control depending on the case and strong indicators for prompt operative intervention.The mortality rates among patients diagnosed with GIT trauma and small bowel perforation are linked to the delay in initial diagnosis, development of multi-organ failure, and sepsis (5).

Case report

Here, we present a male patient aged 35 years old, who came to the ER department in an emergency center away from our hospital by about 80 Kilometers at 2:00 am as an RTA case, 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 theatre (OT) at 9:30 am as an erect chest x-ray revealed massive air under the diaphragm (Figure 2). Diagnostic laparoscopy (DL) was 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 smooth with some 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.

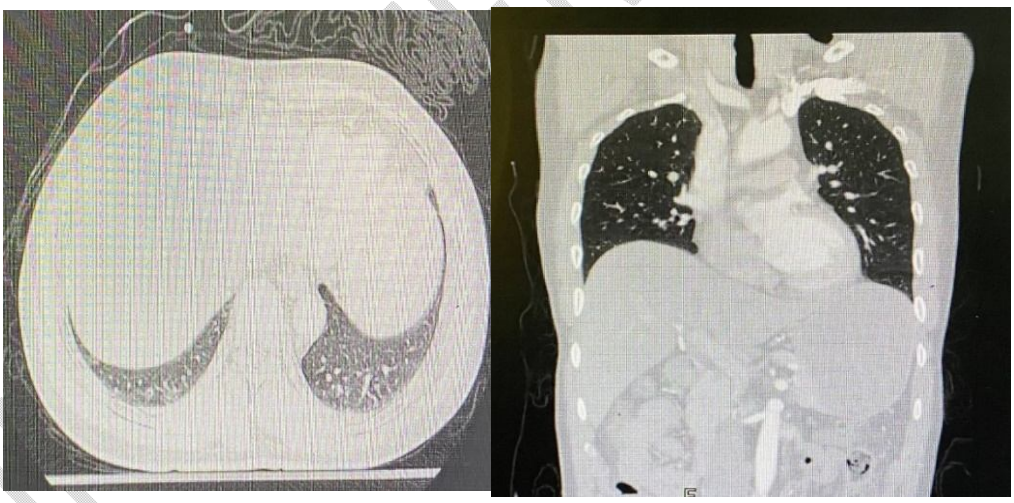

Figure 1: CT abdomen, NOpneumoperitoneum was detected.

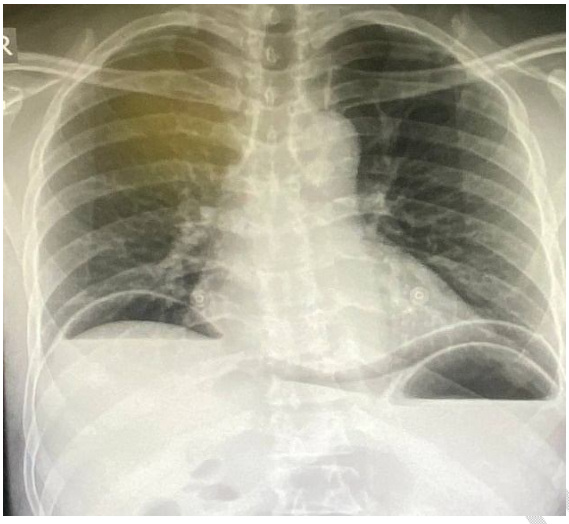

FIGURE 2:ERECT CHEST X-RAYshowing bilaterally massive pneumoperitoneum.

FIGURE 3: 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 gastrointestinal tract injury following blunt abdominal trauma 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 OT for DL in about 7-8 hours. Traumatic causes of small

bowel perforation can be due to blunt or penetrating injuries(our caseafter blunt abdominal trauma).The nature of the small intestines being coiled and occupying the largest portion of the abdominal cavity makes them the most injured intra-abdominal hollow organ, particularly from penetrating injuries such as knife stabbing wounds or gunshots (8). Blunt trauma due to traffic accidents is one of the most common causes of small bowel perforation(as our patient),especially in seat-belt users accounting for approximately 75% of gastrointestinal trauma with potential perforation(9). Small bowel perforation can be of two types: 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 you can see in our case)following blunt trauma to the abdomen helps in decreasing overall morbidity and mortality among these patients (11).Small bowel perforations can present acutely with symptoms ranging from localised abdominal pain to systemic symptoms like fever, nausea, vomiting, and even shock. Additionally, rigidity, guarding, and other peritoneal signs may develop as the condition progresses (12).Although erect plain radiographs are usually the first imaging modality to start with and can detect signs of perforation, they cannot localise the site of perforation (13).The diagnosis of small bowel perforation is usually made by imaging techniques that detect the presence of fluid or gases in the peritoneum or mediastinum. A computed tomography (CT) 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 our patient, NO pneumoperitoneum in the abdominal computed tomography). 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 haemodynamicparameters 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 treatments for the perforation of the small bowel at various locations, there are still no established and reliable therapeutic recommendations for small bowel perforation. In the management of small bowel perforation, 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 GIT trauma and 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).

ETHICAL APPROVAL

As per international standards or university standards, written ethical approval has been collected and preserved by the author(s).

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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