Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 67 Issue 03 | 2024
DOI: 10.5281/zenodo.10876623

DELAYED PRESENTATION OF COLONIC PERFORATION FOLLOWING BLUNT ABDOMINAL TRAUMA: A CASE REPORT

Dr. K. SUCHETA RAO
Junior Resident-III, School of Medical Sciences and Research, Sharda University, Greater Noida, India.

Dr. KULDEEP RAJ
Professor, School of Medical Sciences and Research, Sharda University, Greater Noida, India.

Dr. RIDDHI SHARMA
Junior Resident-II, School of Medical Sciences and Research, Sharda University, Greater Noida, India.

Dr. SHIVANI
Junior Resident-II, School of Medical Sciences and Research, Sharda University, Greater Noida, India.

Abstract

Introduction: Small bowel injury is a known entity following blunt trauma abdomen due to mesenteric tears or ischaemia, however colonic injury due to blunt abdominal trauma is a rare occurrence. Here we present a case of blunt abdominal trauma in which the patient presented with signs of perforation peritonitis 10 days after trauma after initially being managed conservatively. **Case Presentation:** A 35-year-old male presented with a history of high velocity blunt trauma abdomen following a road traffic accident. The clinical features were not suggestive of perforation peritonitis. Following a positive e-FAST, contrast enhanced CT scan of the abdomen was performed, which showed moderate ascites, mesenteric fat stranding and no evidence of solid organ or bowel injury. The patient was managed conservatively for 7 days following acceptance of oral diet and passage of stool and was discharged. He then presented again to the emergency department 4 days following discharge with signs of peritonism. During the exploratory laparotomy, a sigmoid colon perforation along with gangrenous segment of about 5-8 cm with gross faecal contamination was found. Hartmann's procedure was done and the patient was discharged on post-operative day 7. **Conclusion:** Delayed presentation of colonic perforation following blunt abdominal trauma is a rare occurrence and a high index of suspicion and vigilant care is needed to diagnose and adequately treat the same.

BACKGROUND

Hollow viscus injuries as a result of blunt trauma abdomen are one of the common surgical emergencies presenting to the ER. The low prevalence of colonic damage caused by blunt abdominal trauma, along with the lack of a clear diagnostic tool, might result in delays in diagnosis and treatment, resulting in substantial morbidity and death.(1)

CASE REPORT

A 35-year-old male patient presented with a history of high velocity road traffic accident. There was no history ENT bleed, seizures, nausea, vomiting, urinary or stool incontinence. Local examination showed multiple abrasions over both lower limbs. On xamination of the abdomen, there were no features of peritonism. E-FAST was positive and a contrast enhanced CT scan of the abdomen showed hemoperitoneum with

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 67 Issue 03 | 2024
DOI: 10.5281/zenodo.10876623

mesenteric fat stranding, with no evidence of solid organ or hollow viscus injury. The patient was managed conservatively and was gradually started on liquids followed by solids. The patient was discharged on the 7th day after admission, after passing flatus and stool. The patient got readmitted after 10 days of trauma with features suggestive of peritonism and emergency laparotomy revealed gross fecal contamination of the peritoneal cavity, gangrenous sigmoid colon with perforation. Hartmann's procedure was done.

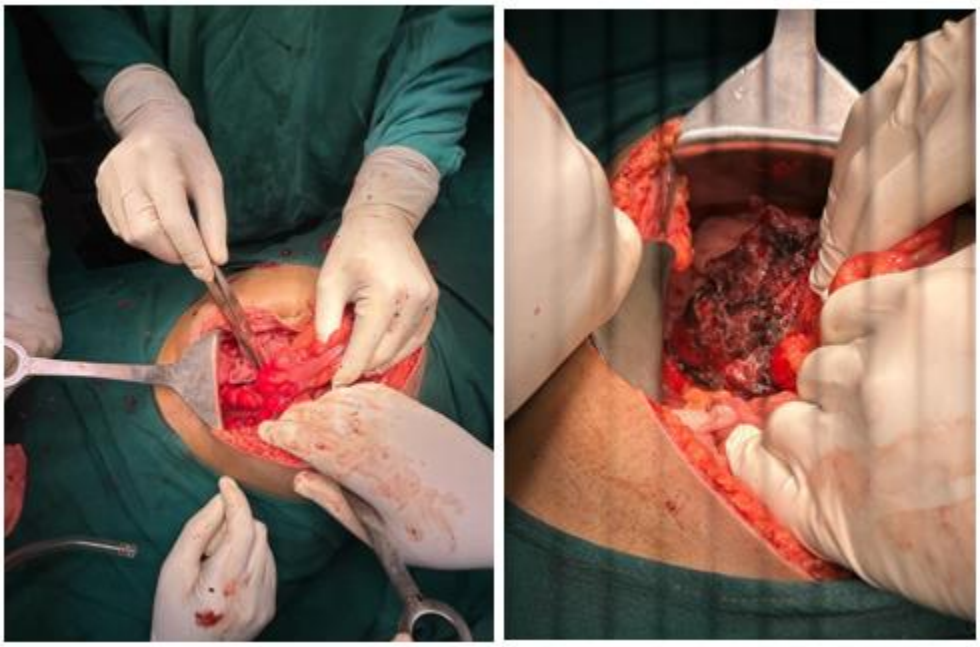

Figure 1: Intraoperative findings

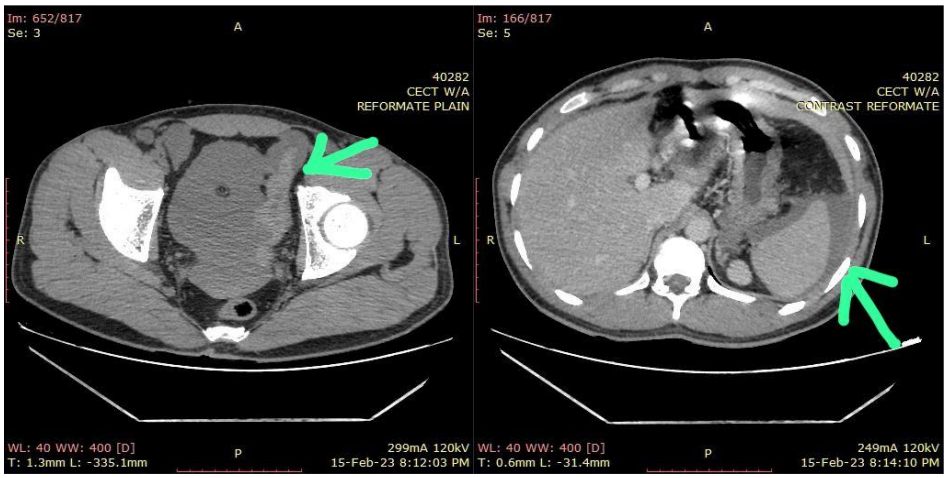

Figure 2: Radiological findings

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 67 Issue 03 | 2024
DOI: 10.5281/zenodo.10876623

DISCUSSION

Bowel perforation has been recorded in fewer than 1% of individuals who have suffered forceful abdominal trauma. Isolated small bowel and large bowel perforation in acute abdominal trauma is uncommon. Crush damage, fast deceleration, and the rupture phenomena are all pathophysiological causes causing intestinal perforation. The most prevalent mechanism is bowel segment crushing, which commonly occurs between the seat belt and the spine.(2,3)

Several pathways for colon damage caused by blunt abdominal trauma have been established. The most frequently acknowledged mechanism is the crushing of the colonic segment between two objects (between the seat belt and the spine or pelvis posteriorly).(4) This causes intestinal wall lacerations, mural and mesenteric hematomas, bowel transection, localised devascularization, and full-thickness contusions. Rapid deceleration produces shearing forces at the bowel's fixed points, the duodeno-jejunal flexure and the ileo-cecal junction for the small intestine. The burst phenomenon is caused by a sudden rise in intraluminal pressure, which results in perforation of the gut wall at the anti-mesenteric border, where the intestine is typically weaker.(1)

Ischemic necrosis causes delayed perforation of the intestine after trauma, either directly to the intestinal wall or indirectly by damage to the mesenteric arteries. The most prevalent cause of delayed intestinal necrosis following forceful abdominal trauma is mesenteric injuries. Mucosal ischemia can cause ulceration and repair by fibrosis or cicatricial stenosis, limiting blood supply to this intestinal tract even more. A series of abdominal X-rays and/or a computed tomography (CT) scan with contrast can help with diagnosis. In the instance of bowel perforation, an X-ray might reveal air behind the diaphragm. FAST (focused assessment with sonography in trauma) is a quick and sensitive tool for detecting free intraperitoneal fluid, although it is less reliable for diagnosing mesenteric ischemia. CT scan findings such as porto-mesenteric vein gas and intramural gas in the small intestine show significant mesenteric ischemia. Despite its high false-negative incidence, a contrast CT scan is the imaging modality of choice in patients with stable blunt abdominal injuries who continue to have abdominal discomfort.(5) Patients who acquire symptoms during the observation period may benefit from a repeat CT scan. Ultrasonography and MRI has been widely used to evaluate blunt abdominal trauma.

Patients who are stable and show no clinical indications of peritonitis are treated conservatively. However, the possibility of delayed small bowel perforation should be considered, and patients should be alerted and counselled about the symptoms. Patients who are unsteady or have indications of intestinal perforation should have a laparotomy. Intra-abdominal contamination is common, and a final repair or anastomosis is likely to fail. The delayed presentation causes a threefold increase in morbidity and death. Postoperative complications such as wound infection, wound dehiscence, intra-abdominal abscess, acute respiratory distress syndrome, and sepsis are becoming more common, contributing to morbidity.(6)

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 67 Issue 03 | 2024
DOI: 10.5281/zenodo.10876623

CONCLUSION

Direct intestinal trauma can cause massive hematomas on the intestine wall, which can subsequently perforate owing to ischemia. Surgeons should be aware of this unusual presentation since therapy is difficult and has major medico-legal consequences. Close monitoring of the patient's vital signs and evaluation for the development of abdominal signs, as well as repeat imaging at the commencement of abdominal signs, are essential components of effective therapy of these patients.

References

1) Ertugrul G, Coskun M, Sevinc M, Ertugrul F, Toydemir T. Delayed presentation of a sigmoid colon injury following blunt abdominal trauma: a case report. J Med Case Rep. 2012 Aug;6:247.

2) McGuigan A, Brown R. Early and delayed presentation of traumatic small bowel injury. Case Reports. 2016;2016:bcr2016214586.

3) Jahromi AH, Johnson L, Youssef AM. Delayed small bowel perforation following blunt abdominal trauma: a case report and review of the literature. Asian J Surg. 2016;39(2):109–12.

4) Vance BM. Traumatic lesions of the intestine caused by nonpenetrating blunt force. Arch Surg. 1923;7(1):197–212.

5) Uludag M, Citgez B, Ozkurt H. Delayed small bowel perforation due to blunt abdominal trauma and peri-appendicitis in a patient with situs inversus totalis: a report of a case. Acta Chir Belg. 2009;109(2):234–7.

6) Fakhry SM, Brownstein M, Watts DD, Baker CC, Oller D. Relatively short diagnostic delays (<8 hours) produce morbidity and mortality in blunt small bowel injury: an analysis of time to operative intervention in 198 patients from a multicenter experience. J Trauma. 2000 Mar;48(3):405–8.