

Complete Jejunal Transection After Blunt Abdominal Trauma: A Case Report

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Introduction: Isolated complete transection of the small bowel is extremely rare in blunt abdominal trauma. If it occurs, it is often associated with high-energy impact, as seen in motor vehicle accidents and falls from heights. In this case, a trivial trauma due to a handlebar injury caused a complete transection of the middle jejunum.

Case Presentation: A 47-year-old man walked into the emergency department with moderate abdominal pain ~10 hours after a fall on to a bicycle's handlebar from a standing position. A bedside ultrasound showed minimal amount of free fluid and a following performed computed tomographic scan indicated an edematous loop of small bowel with diminutive amount of extraluminal air, suggesting small bowel perforation. Because of the absence of abdominal peritonism in a hemodynamically stable patient, a conservative treatment and surveillance was established. In the follow-up, the patient suddenly developed severe abdominal pain with now clear signs of peritonism. An emergency laparoscopy showed a complete transection of the middle jejunum. A primary anastomosis was performed. The patient had an uneventful recovery and was discharged after 7 days.

Conclusions: Even seemingly trivial blunt abdominal traumas can cause complete transection of the small bowel, as shown in this case. Patients with blunt abdominal trauma need to be reviewed frequently by an experienced clinician. Diagnostic laparoscopy attaches a great importance to early detection and treatment of small bowel injuries. The mechanical pattern of the injury seems to be more important than the energy of the impact itself.

Key Words: complete jejunal transection, blunt abdominal trauma, handlebar injury, diagnostic laparoscopy

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Blunt abdominal trauma rarely causes isolated small bowel injury. Especially, complete transection of the small intestine is extremely uncommon and mostly occurs in high-energy trauma such as in motor vehicle accidents, sports, or falls from heights.¹ Only a few cases of complete jejunal transection following blunt abdominal trauma have been reported in the literature.¹

In this case, a low-energy trauma due to a handlebar injury caused a complete transection of the middle jejunum. A similar case of a handlebar injury incurred by a 12-year-old boy was described by Sandiford et al.²

CASE PRESENTATION

A 47-year-old man presented himself (walk-in) in our emergency department with moderate abdominal pain after suffering blunt abdominal trauma.

The patient reported a fall on to a bicycle's handlebar from a standing position. The accident occurred ~10 hours earlier to the hospital admission. The next morning, the patient decided to seek medical advice because of persisting pain. Physical examination did not show any abnormalities apart from abdominal wall tenderness and local hematoma with a round contusion mark of the left lateral region. The patient was hemodynamically stable (RR 111/66, pulse 58). A bedside ultrasound was performed, which showed a minimal amount of free fluid in the rectovesical pouch. To rule out abdominal injuries, a computed tomography (CT) scan was performed. It showed an edematous loop of small bowel with diminutive amounts of extraluminal air, suggesting small bowel perforation, a left psoas hematoma, and no free peritoneal air or larger amount of free fluid.

Because of the inconclusive findings, 12 hours after trauma, we decided to go for conservative treatment and surveillance. Four hours after emergency department admission, the patient suddenly developed severe abdominal and shoulder pain with now clear signs of abdominal peritonism. An immediately performed emergency laparoscopy showed large amounts of intestinal fluids caused by a complete transection of the middle jejunum with no other mesenteric injury and intact mesenteric vessels (Fig. 1). A jejunal resection of the defect area and primary anastomosis was carried out through a transversal minilaparotomy. Finally, a laparoscopic-assisted abdominal lavage was performed, an abdominal drainage was placed under laparoscopic control, and intravenous empiric antibiotic therapy was established. The postoperative course was uneventful with complete recovery and discharge in good condition after 7 days.

Eight days after discharge, the patient presented himself again to our emergency department with right-sided chest pain, coughing, and minor hemoptysis. Lung embolism was ruled out with a CT angiography. Finally, a bilateral, hospital-acquired pneumonia was diagnosed and treated empirically with oral amoxicillin clavulanate for 5 days.

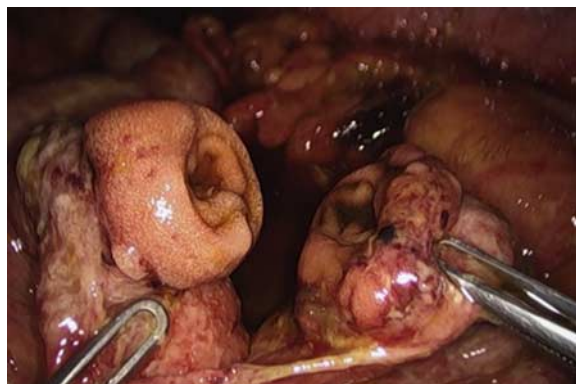


FIGURE 1. Intraoperative findings: complete transection of the middle jejunum.

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DISCUSSION

Complete transection of the small bowel is an extremely rare diagnosis. The most common causes of blunt small bowel injuries are associated with high-speed motor vehicle accidents and falls from heights. The mechanism in these high-energy traumas is usually mesenteric laceration due to direct compression or rupture of the small bowel due to deceleration injury. This affects, in particular, fixed segments such as the duodenum, duodenojejunal flexure, proximal jejunum close to the ligament of Treitz, and the terminal ileum.² However, low-energy traumas also can cause blunt small bowel perforation, as presented above. They often occur as a result of handlebar injuries or physical assaults. In the presented case, the handlebar most likely effected a localized blunt force to the abdomen, which resulted in a direct compression of the small bowel loop against the vertebral column. The hematoma of the abdominal wall and the psoas muscle as well as the sharp complete section of the bowel loop are an indication for this hypothesis.

In isolated small bowel injuries, early clinical signs may be unsuspecting. In our case, the patient was complaining only of moderate abdominal pain. In the early stage, there were no signs of abdominal peritonism. After the first physical examination, we performed a bedside ultrasound [focussed assessment with sonography for trauma (FAST)], which showed a minimal amount of free fluid in the rectovesical pouch. As shown in a retrospective study by Dammers et al,³ the sensitivity of FAST is limited. In contrast, the specificity is high (99% in this study). However, a positive FAST needs further diagnostic studies to identify the source of bleeding or the extent of organ injury. Therefore the FAST examination provides important prognostic information with minimal effort in hemodynamically stable patients presenting with blunt abdominal trauma.³ The CT scan is the safest, noninvasive tool to rule out a small bowel injury. However, if it is performed early, a small bowel perforation may be missed. Patients, even those with trivial blunt trauma to the abdomen, should be reviewed frequently by an experienced clinician. At the

earliest sign of clinical deterioration, a prompt surgical intervention should be considered.² Diagnostic laparoscopy is a valuable tool for early detection and treatment of small bowel injuries.⁴ In patients with isolated intra-abdominal fluid and clinical findings, laparoscopy is a feasible and safe tool for the diagnosis and treatment of hemodynamically stable patients. Moreover, it can be used to avoid a non-therapeutic laparotomy.⁵ Delayed diagnosis of small bowel perforation is associated with increased morbidity and mortality.⁶

CONCLUSIONS

Even low-energy abdominal traumas can cause small bowel perforation/complete transection. The mechanical pattern of the injury seems to be more important than the energy of the impact itself.

REFERENCES

1. Okello M, Batte C, Buwembo W. Jejunal transection following trivial trauma: case report and review of literature. *Int J Surg Rep.* 2016;27:41–43.
2. Sandiford NA, Sutcliffe RP, Khawaja HT. Jejunal transection after blunt abdominal trauma: a report of two cases. *Emerg Med J.* 2006;23:e55.
3. Dammers D, El Moumni M, Hoogland II, et al. Should we perform a FAST in haemodynamically stable patients presenting after blunt abdominal injury: a retrospective cohort study. *Scand J Trauma Resusc Emerg Med.* 2017;25:1.
4. Addeo P, Calabrese DP. Diagnostic and therapeutic value of laparoscopy for small bowel blunt injuries: a case report. *Int J Surg Case Rep.* 2011;2:316–318.
5. Heng-Fu L, Ying-Da C, Shyr-Chyr C. Value of diagnostic and therapeutic laparoscopy for patients with blunt abdominal trauma: a 10-year medical center experience. *PLoS One.* 2018;13:e 0193379.
6. Fakhry SM, Brownstein M, Watts DD, et al. 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;48:408–414.